Montana State Fund

Review of Rates Effective July 1, 2014
&
Review of Claim Liability as of June 30, 2014

AMI Risk Consultants, Inc.

Montana State Fund

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&
Review of Claim Liability as of June 30, 2014

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Date: November 17, 2014

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November 17, 2014

Ms. Tori Hunthausen
Legislative Auditor
1301 E. 6th Avenue
Helena, Montana 59601
State Capitol Building RM 160

Dear Ms. Hunthausen:

We are pleased to submit to you twenty-five (25) bound copies of our final report on the Review of Rates Effectively July 1, 2014 and the Review of Claim Liability as of June 30, 2014 for the Montana State Fund.

We greatly appreciate the cooperation and courtesy extended to us during the course of this engagement. Please do not hesitate to contact us at (305) 273-1589 if you have any question about the report.

Thank you very much for the opportunity to work with you.

Sincerely,

Bob Ingeo, FCAS, MAAA, CPCU, ARM
President

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I. EXECUTIVE SUMMARY

Review of Rates Effective July 1, 2014
Review of Claim Liability as of June 30, 2014

PURPOSE

The Legislative Audit Division ("LAD") has engaged the services of AMI Risk Consultants, Inc. ("AMI") to perform the following:

- Determine if the rates established by the Montana State Fund ("MSF") for workers' compensation insurance are excessive, inadequate, or unfairly discriminatory;
- Evaluate the adequacy of amounts reserved by MSF at June 30, 2014 and the reasonableness of procedures used in the claim reservation process; and
- Recommend areas where MSF should modify its procedures for estimating claims liability and its rate making procedures to ensure rates are not excessive, inadequate, or unfairly discriminatory.

SCOPE

AMI's contract with the LAD requires that this report address the following:

A. For MSF rates effective July 1, 2014

1. Include appropriate analysis of the data used in the rate setting process.
2. Include appropriate analysis of the methods for setting the overall rate level and the rates by class.
3. Comment and conclude on the reasonableness of the rate setting methodology, formulas and procedures.
4. Conclude as to whether the rates effective July 1, 2014 are excessive, inadequate or unfairly discriminatory.

B. For MSF loss and loss adjustment expense ("LAE") reserves as of June 30, 2014

1. Evaluate and comment on the data, formulas and methodology used by MSF's contract actuary in their estimates of MSF's loss and LAE liabilities.
2. Assess, comment and conclude on the reasonableness of the loss and LAE reserves established by MSF.

C. Information provided by MSF to their contract actuary

1. Review the procedures used by MSF's contract actuary to assess the consistency and reasonableness of the information obtained from MSF.
2. Determine the reliance placed on the information.
3. Comment and conclude on the adequacy of the procedures used by MSF's contract actuary to assess the consistency and reasonableness of information obtained from MSF.

D. Ranking of data elements

1. Review the data elements used by MSF's contract actuary in the rate setting process and the estimation of claims liability respective to each fiscal year reviewed.
2. Rank the data elements used by the actuary in terms of risk that erroneous data could materially affect the rates and estimated claims liability.

MSF COMMENTS AND RESPONSE	MSF and their contract actuary, Towers Watson ("TW"), had an opportunity to comment and respond to the conclusions presented in this report. Their response is attached to the final version of this report.

SUMMARY OF CONCLUSIONS

MSF Rates Effective July 1, 2014

In our opinion, the rates effective July 1, 2014 are not excessive, inadequate, or unfairly discriminatory. See Section A1 to A4.

MSF Loss and LAE Reserves as of June 30, 2014

Our opinion is that MSF's recorded loss and LAE reserves for the New Fund at June 30, 2014 are reasonable. However, our estimated loss and LAE reserves at June 30, 2014 for the Old Fund are above TW's high range of estimate. See Sections B1 to B2.

Data Testing Procedures

Our opinion is that the procedures used by TW to test the data used in both ratemaking and reserving are adequate. We do not have any further testing to suggest.

See Sections C1 to C3.

Ranking of Data Elements

It is our opinion that the rates and estimated reserves are most sensitive to errors in historical paid and reported loss triangles together with information on MSF internal operations.

See Sections D1 to D2.

SOURCES OF INFORMATION

AMI received the following documents from MSF:

Rates

- TW's Rate Level Analysis for the July 1, 2014 to June 30, 2015 Exposure Period (including Appendices)
- TW's Loss Cost Multiplier Analysis for the July 1, 2014 to June 30, 2015 Underwriting Year
- TW's Multivariate Model and Tier Structure Validation (2011) and the 2012 Update
- Tiered Rating Plan Board Packet
- Loss Cost Exceptions Board Packet
- MSF Actual and Expected Results by Rate Tier as of March 31, 2013
- TW Certification of Loss Cost Exceptions
- TW Certification of Tier Rating
- MSF Top 20 Class Codes by Premium Volume as of December 31, 2013
- Internal Notes on MSF Special Classifications
- Internal Notes on Selected Deviations
- Terrorism Load from NCCI Filing
- Historical MSF equity-to-premium and investment yields
- Board of Directors Presentation (May 6, 2014)
- Board of Directors Meeting Minutes (May 6, 2014)

Reserves

- TW's Indicated Unpaid Loss and LAE Amounts as of June 30, 2014 - New Fund and Old Fund (including Appendices).
- MSF FY 2014 Statutory Balance Sheet (draft)
- Reconciliation of TW Indicated Reserves at June 30, 2014 to MSF Carried Reserves
- TW's September 2, 2014 letter to Mr. Laurence Hubbard addressing Anticipated Reinsurance Recoveries as of June 30, 2014.
- Board of Directors Presentation (September 19, 2014)

In addition we communicated with Dan Gengler, MSF's Internal Actuary, and he provided background information and perspective for our consideration.

ACKNOWLEDGMENT OF QUALIFICATIONS	Aguedo M. (Bob) Ingco is a consulting actuary and President of AMI Risk Consultants, Inc. He is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries. Mr. Ingco meets the qualification standards of the American Academy of Actuaries to provide the opinions contained in this report.

II. ACTUARIAL REPORT

BACKGROUND **Rates**

Effective July 1, 2014 MSF implemented a **0.0% change** to the Fund's overall rate level.

Depending on the investment yield MSF earns over the lifetime of the FY 2015 policy liabilities, TW estimates that the policies, at this rate level, will make the following contribution to equity:

TW Estimated Contribution to Equity Selected Rate Change of 0% % of FY 2015 Manual Premium	
Investment Yield	Contribution to Equity
0.00%	-8.1%
2.25%	1.2%
2.50%	2.0%
2.75%	2.8%
3.00%	3.6%

Historical Investment Yield

MSF's investment yield in recent years has been as follows:

MSF Investment Yield By Fiscal Year*					
2009	2010	2011	2012	2013	2014
4.68%	4.21%	3.80%	3.70%	3.45%	2.79%

*Recent bond purchases yielding considerably less. Effective duration as of 5/31/13 was 3.7 years for the bond portfolio. Yield for 2014 computed from Draft FY2014 Annual Statement.

Target Equity

MSF's target equity is a **reserve to equity ratio between 2.0 and 2.5**. In recent years the ratio realized has been:

MSF Reserves to Equity Ratio By Fiscal Year					
2009	2010	2011	2012	2013	2014
4.05	3.47	2.95	2.80	2.43	2.09

*Yield for 2014 computed from Draft FY2014 Annual Statement.

BACKGROUND (CONTINUED)

Reserves

At June 30, 2014 MSF recorded a loss and LAE liability of **$924.5 million** which was **$80.1 million** higher than TW's central estimate for the New Fund. Of the **$80.1 million** difference, **$2.5 million** are for liabilities not explicitly contemplated in TW's estimates (Other States Coverage and Employers Liability).

MSF Recorded Reserves – New Fund Compared to TW Central Estimate At June 30, 2014 ($millions)		
TW Central Estimate	MSF Recorded	Difference
$844.4	$924.5	80.1

TW estimated a loss and LAE liability of $45.0 million for the Old Fund. MSF does not record reserves for the Old Fund. The Old Fund reserve estimate was provided to assist the Old Fund's controlling authority.

State of Montana Recorded Reserves – Old Fund Compared to TW Central Estimate At June 30, 2014 ($millions)		
TW Central Estimate	State of Montana Recorded	Difference
$45.0	**$45.0**	**$0**

BACKGROUND (CONTINUED)

Reserves (continued)

Adverse Development – TW Central Estimates - New Fund

The history of TW Central Estimates showed a pattern of chronic adverse development, as estimates of "ultimate loss" are repeatedly restated at higher and higher levels in the 2000's. This is more evident in the older accident years than the recent ones, as seen in the table below. However, the adverse development only represents a small percentage of the corresponding ultimate losses and that the pattern of adverse development seems to have stabilized over the recent years.

TW Central Estimates of Ultimate Loss -New Fund Annual Loss Reserve Reviews Adverse (Favorable) Development Over the Past Six Years (2008 – 2014) ($000's)			
Development Period	Older Accident Years 90/91 – 02/03	Newer Accident Years 03/04 – 12/13	Total
2008 to 2009	$13,323	$5,624	$18,947
2009 to 2010	7,482	6,323	13,805
2010 to 2011	4,345	(2,085)	2,260
2011 to 2012	4,150	(2,180)	1,970
2012 to 2013	7,170	(4,150)	3,020
2013 to 2014	335	(4,475)	(4,140)
6-Yr Total	**$36,805**	**($943)**	**$35,862**

A1: Analysis of Data Used in Rate Setting

Data Used for the Overall Rate Level Analysis

TW used a combination of loss, expense, premium, exposure and economic data in their estimation of MSF's projected contribution to equity for different rate level change scenarios. Most of the data was supplied by MSF including the economic data such as medical CPI, unemployment and employment rates, and average weekly wages. Data was tested for consistency in order to validate the assumptions of the different actuarial methodologies used. (Those tests will be detailed in section C1 of this report).

Data Used for the Tier Rating

To update MSF's tier structure in response to the changes in NCCI experience modification factors, TW performed a multivariate analysis in predicting loss ratios using individual policyholder claims and exposure data with account size, experience modification factor, hazard grade, historical frequency, and claim-free tenure as independent variables. Before running the model, TW performed several diagnostic and data reasonableness checks, as described in section C1.

Data Used for the NCCI Class Deviations and Special Classifications

MSF uses average manual premiums and pure premium indications for each class together with a credibility model to flag NCCI classes that merit further review and to derive rates for special classes not included in the NCCI class plan.

A2: Analysis of Methods for Setting Overall Rate Level and Rates by Class

Overall Rate Level

The projected contribution to equity is determined using premium and loss data for accident years 1999/2000 to 2012/2013. Manual premiums are developed to ultimate and adjusted to the 2014/2015 manual rate level. Losses are likewise developed to ultimate and adjusted to current mix of business and 2014/2015 benefit level. Ultimate on-level losses are further adjusted for loss ratio trend and are loaded for Employers' Liability and reduced by a ceded percentage. A set of low, central, and high indications is derived separately for medical and indemnity and are then summed to a combined indication for each accident year.

The ALAE and Other Expense (General Underwriting and Production Expense) loadings are calculated using historical paid-to-paid ratios by fiscal year. The ULAE loading is computed using the Johnson method. Both loss adjustment expense loadings are partially adjusted to reflect the effects of HB 334.

Losses and LAE are then discounted using a selected payment pattern and discount rates 0.00%, 2.25%, 2.50%, 2.75%, and 3.00%.

The following loadings provided by MSF are also incorporated into the analysis:

- 5.0% adverse deviation (% of loss)
- 0.7% terrorism load (% of loss)
- 0.7% terrorism load (% of earned premium)
- 6.4% commissions (% of earned premium)
- 2.4% expense constant revenues (% of standard premium)
- 2.3% variable reinsurance costs (% of standard premium)
- 0.3% fixed reinsurance costs (% of earned premium)
- 6.5% pricing programs off-balance (% of manual premium)

An outline of our analysis regarding the different methods used in projecting the ultimate losses by accident year is in Appendix A.

TW uses generally accepted actuarial methods throughout the rate setting practice. In addition, they used regression analysis to determine the trend factors for claim count, severity, and loss ratio trends based on economic variables.

A2: Analysis of Methods for Setting Overall Rate Level and Rates by Class (continued)

Tier Rating

TW utilized a multivariate model to estimate loss ratios using account size, experience modification factor, hazard grade, historical frequency, and claim-free tenure as independent variables. This is a standard method used for classification ratemaking. A review is performed regularly to monitor the reasonableness of the TW rate tier relativities when compared to actual experience.

NCCI Class Deviations and Special Classifications

Every year MSF undergoes an underwriting review of the classes with MSF experience significantly different from NCCI indications.

Expected combined ratios are computed using the policy premium database, limited losses, 2014/2015 rate tier parameters and applicable net underwriting debits/credits, expenses, and other provisions. These expected combined ratios are examined to determine if the expected profitability for each tier is roughly equivalent. If material differences exist, further review will be done with regards to the tier assignment criteria or the tier relativities in addition to possible underwriting reviews.

MSF also has special classifications that are not recognized by NCCI but are implemented to meet the needs of the MSF's book of business. Indicated rates for these special classes are determined as part of the classification review process.

A3: Reasonableness of Rate Setting Approach

In this section we will comment upon TW's indications, including the approach applied and the actuarial selections made. In addition we show the results of our own calculations.

Comments on Overall Rate Level Approach

The TW approach to determining the projected equity contribution recognizes the appropriate, standard ratemaking elements. Our opinion of the various selections and calculations made by TW are discussed below.

Selection of Ultimate Losses

Our opinion is that TW's selections of ultimate losses are somewhat on the low side of the indications. Please see section B2 of this report for detailed discussion. In their overall rate level calculations, TW includes a load for adverse deviation of ultimate losses, at the request of MSF management based on a Montana statute requiring that MSF rates be set at a level that is more rather than less likely to cover costs. However, in our calculations we elected to remove the adverse deviation load and instead select ultimate losses nearer the midpoint of the Tower Watson indications which are higher than their selected ultimates.

Adjustments for HB 334

Both the LAE loading and medical payment pattern were adjusted for the impact of HB 334. The adjustment of the LAE factors, however, is a partial reflection of the estimated full impact of the benefit change. In our opinion, a partial adjustment is reasonable since the actual impact of the HB 334 will not be known for several years and may be modified as its provisions are tested in the courts.

A3: Reasonableness of Rate Setting Approach (continued)

Calculation of Rates on a Direct Basis

Our own rate level calculations below are performed on a direct basis. We did not reduce the indicated loss ratio by the ceded portion, and we excluded any reinsurance costs. In our opinion, this is an appropriate approach to determining the cost of risk transfer between the MSF and the insured.

Comparison of Assumptions and Projected Equity Contribution (as % of Premium)		
Component	**TW**	**AMI**
Ultimate Loss Ratio	66.8%	69.9%
Ceded Losses	0.50%	0.00%
Adverse Deviation	5.0%	0.0%
Variable Reinsurance Costs	2.3%	0.0%
Fixed Reinsurance Costs	0.3%	0.0%
Rate Change	0.0%	0.0%
Investment Yield	Projected Equity Contribution	
0.00%	-8.1%	-6.0%
2.25%	1.2%	3.1%
2.50%	2.0%	3.9%
2.75%	2.8%	4.7%
3.00%	3.6%	5.4%

Our projected equity contributions are slightly higher for each investment yield scenario.

Comments on Tier Rating Approach, Class Deviations, and Special Classifications

The methods used by TW in determining the indicated rates by class recognize the appropriate, standard ratemaking elements. In our opinion, their approach appropriately takes into account the changing claims conditions but still allows for rate stability.

REVIEW OF RATES EFFECTIVE JULY 1, 2014 (continued)

A4: Conclusion Regarding Rates Effective July 1, 2014

In our opinion, the rates effective July 1, 2014 are not excessive, inadequate, or unfairly discriminatory.

Overall Rate Level

Since the MSF's target reserve-to-equity ratio has been achieved in the 2014 fiscal year, a rate level that is at or near break-even is appropriate. Our calculated projected equity contribution shows a break-even point at an investment yield between 0.00% and 2.25%, which is a reasonable estimate of the investment yield that could be expected for new policy money in the current investment environment.

Tier Rating Approach, Class Deviations, and Special Classifications

We believe the procedures and methodology used by TW and MSF in class ratemaking and tiering are reasonable. Their methods highlight both statistical considerations and expert opinion in determining the appropriateness of class rates and tier definitions.

B1: Data and Methods Used by MSF's Contract Actuary

An outline of the data and methods used by TW in estimating loss and LAE reserves is attached to this report as **Appendix A**. An overview and discussion follow below.

Data Used by MSF's Contract Actuary

Similar to the overall rate level analysis, TW used a combination of loss, premium, exposure and economic data, mostly supplied by MSF, in their estimation of MSF's estimated loss and LAE reserves. The same consistency tests are done as described in section C1.

For the Old Fund, open claims data for Fatal, Permanent Total, and Permanent Partial injuries was used for the Sherman-Diss approach together with assumed medical inflation rates, claimant birth dates, and SSA life tables.

Methods Used by MSF's Contract Actuary

TW applied a variety of methods to estimate MSF's loss reserves. Some are methods frequently used in practice, such as:

- Loss Development Approach – projects cumulative paid losses by accident year to ultimate using selected factors based on historical payment patterns.
- Bornhuetter-Ferguson Approach – estimates ultimate losses by accident year using actual paid and expected unpaid losses.
- Berquist-Sherman Approach – projects adjusted cumulative reported losses by accident year to ultimate using selected factors.

Others are more unusual:

- Frequency-Severity Index Approach – estimates ultimate losses by accident year using a base 2014/2015 level ultimate losses and estimated trend factors.

B1: Data and Methods Used by MSF's Contract Actuary (continued)

- Adjusted Case Reserve Approach – estimates ultimate losses by accident year using case reserves augmented by estimates of unreported claims, future reopenings, change in disability type, medical inflation/cost of living adjustments and future development potential (Old Fund only).
- Sherman-Diss Method (Old Fund only) – projects medical and indemnity payments for open claims using a heuristic trended mortality model.

To estimate the ALAE loading, TW used a single paid-to-paid method. To estimate ULAE loading, TW used the Johnson Method which is based on relative ULAE costs per claim activity.

Adjustments and Accommodations for Changing Conditions

The MSF data underlying the loss reserve estimates have been impacted by changes in benefit structures, faster closure rates, reduced temporary total disability durations, increased lump sum payments, inconsistent case reserving, shifts in the business mix, and varying loss ratio trends.

TW made a number of adjustments and accommodations for these changing conditions impacting the data. These include the following:

- Selecting loss development factors for groups of accident periods, grouping the accident periods with common statutory benefits;
- Accelerating selected development patterns to reflect faster closure rates and improvements in claims processing;
- Computing indicated ultimates after adjusting for lump sum settlements and excess medical payments;
- Using Berquist-Sherman approach to adjust for the varying case reserve levels in the reported loss triangles; and
- Using the Frequency-Severity Index method to reflect changes in the business mix and loss ratio trends.

B1: Data and Methods Used by MSF's Contract Actuary (continued)

Key Selections

There are a number of points in the loss reserve calculations where selections are made based on actuarial judgment. One of the key assumptions that impacts the majority of the methods applied is the selection of paid loss development factors.

As a check on the reasonableness of TW's paid loss development factor selections, we made our own selections and compared the resulting factors and indicated ultimate losses.

We estimated loss development factors separately for indemnity and medical using the approach outlined in a 2003 paper by David Clark entitled "LDF Curve-Fitting and Stochastic Reserving: A Maximum Likelihood Approach." This method aims to estimate a "growth curve" from the loss triangle. The growth curve can be interpreted as the payment pattern as a percentage of ultimate or the inverse of the cumulative development factors.

Because of the inconsistency in case reserves and the heterogeneity of payment rates in the data, we took the approach similar to TW in which we:

- did not use the incurred loss development triangle; and
- segmented the analysis of the paid loss development triangle by accident year groups.

For each accident year group, we estimated the growth curve as a mixture of the Loglogistic and Weibull distributions where we gave greater weight to the more recent accident years. Because of the greater uncertainty in extrapolating the curve past the available development in the data, we truncated the model at 600 months for indemnity and 612 months for medical, i.e., the estimated tail factor at these months was set to 1.000. This cut-off point appears reasonable in light of the indicated development patterns.

B1: Data and Methods Used by MSF's Contract Actuary (continued)

Key Selections (continued)

The estimated factors from the model were then credibility-weighted with the indicated volume-weighted average age-to-age factors in the triangle. The credibility weights were based on the square-root rule with higher credibility assigned to earlier development periods. The results were then smoothened to determine our selected paid loss development factors. However unlike TW, we did not accelerate the payment patterns. Comparisons of AMI and TW development factors are shown in the next section.

B2: Reasonableness of MSF's Loss and LAE Reserves

Opinion on TW's Loss and LAE Estimates

In our opinion the data and methods applied by TW are reasonable. TW made every effort to account for changing conditions, both internal and external to MSF, in their choice and application of data. Furthermore their selection of loss development factors and other selected values required by the various methods appear reasonable.

However, we do disagree with the following:

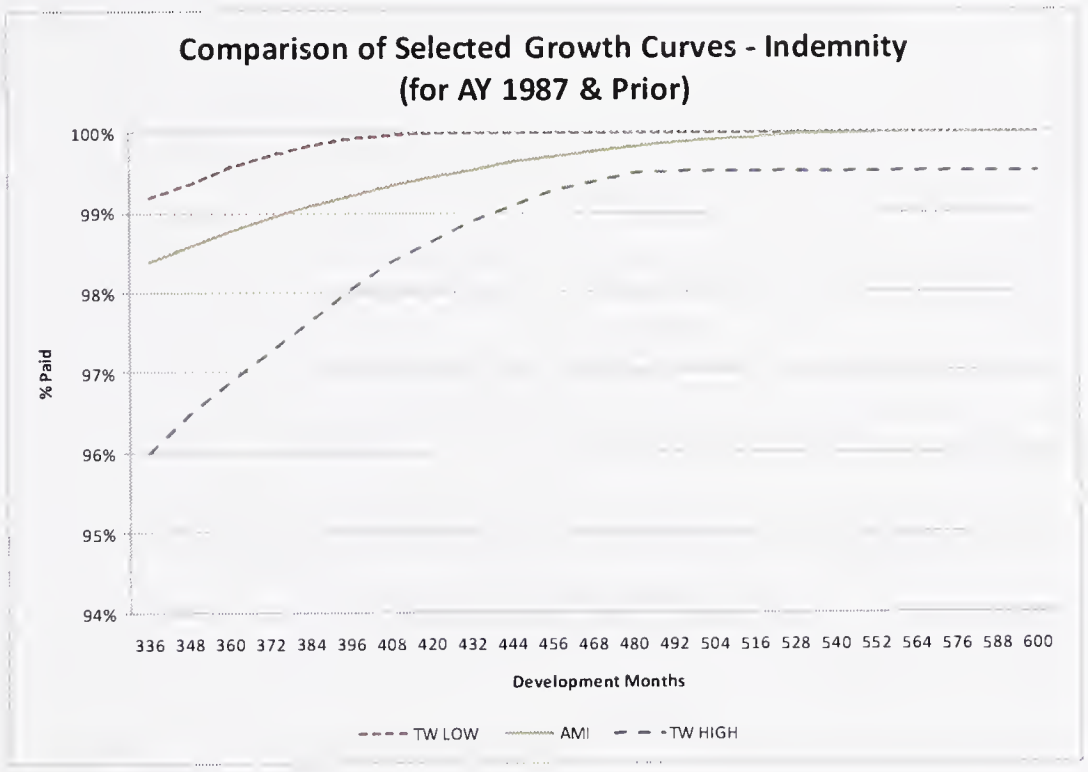
- TW's final ***selection of ultimate losses*** based on the range of indications produced by the array of methods applied appears low.
- TW's ***selections of ALAE and ULAE factors*** aren't adjusted for the impact of H.B. 334 for accident years 2011/2012 and later.

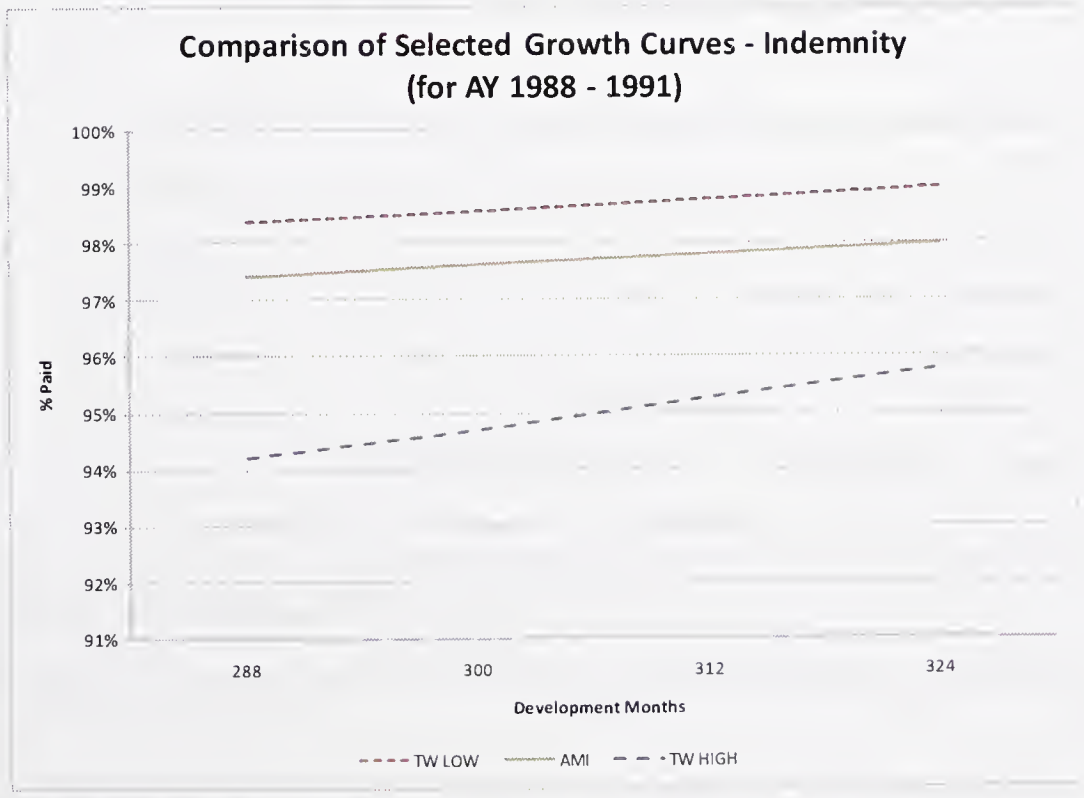
No two actuaries will make exactly the same selections of factors or estimates when faced with similar indications. However, ***it is our opinion*** that in light of the persistent adverse development of past estimates, a selection of ultimate losses closer to the midpoint of the various indications would be prudent. Furthermore, a small adjustment of ALAE and ULAE factors for the impact of H.B. 334 seems appropriate and would be consistent with the ratemaking treatment of LAE.

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

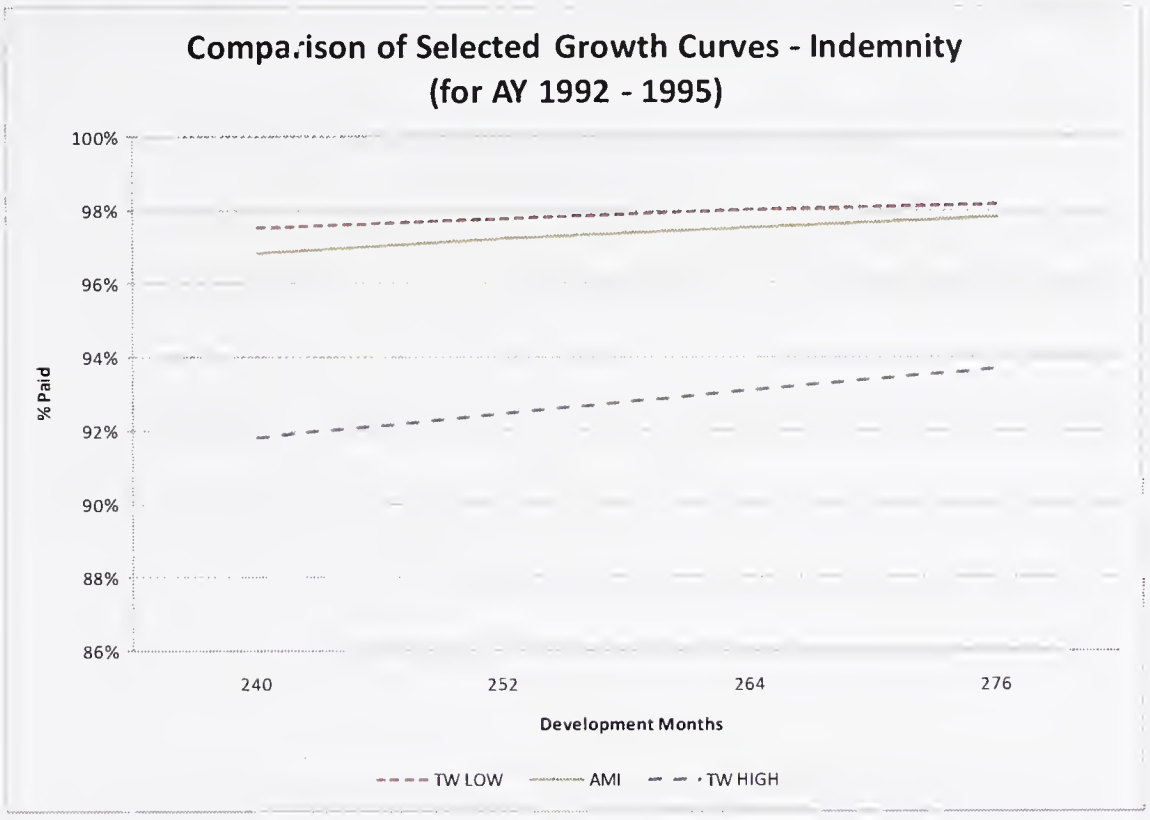
Comparison of TW and AMI Selections – Loss Development Factors

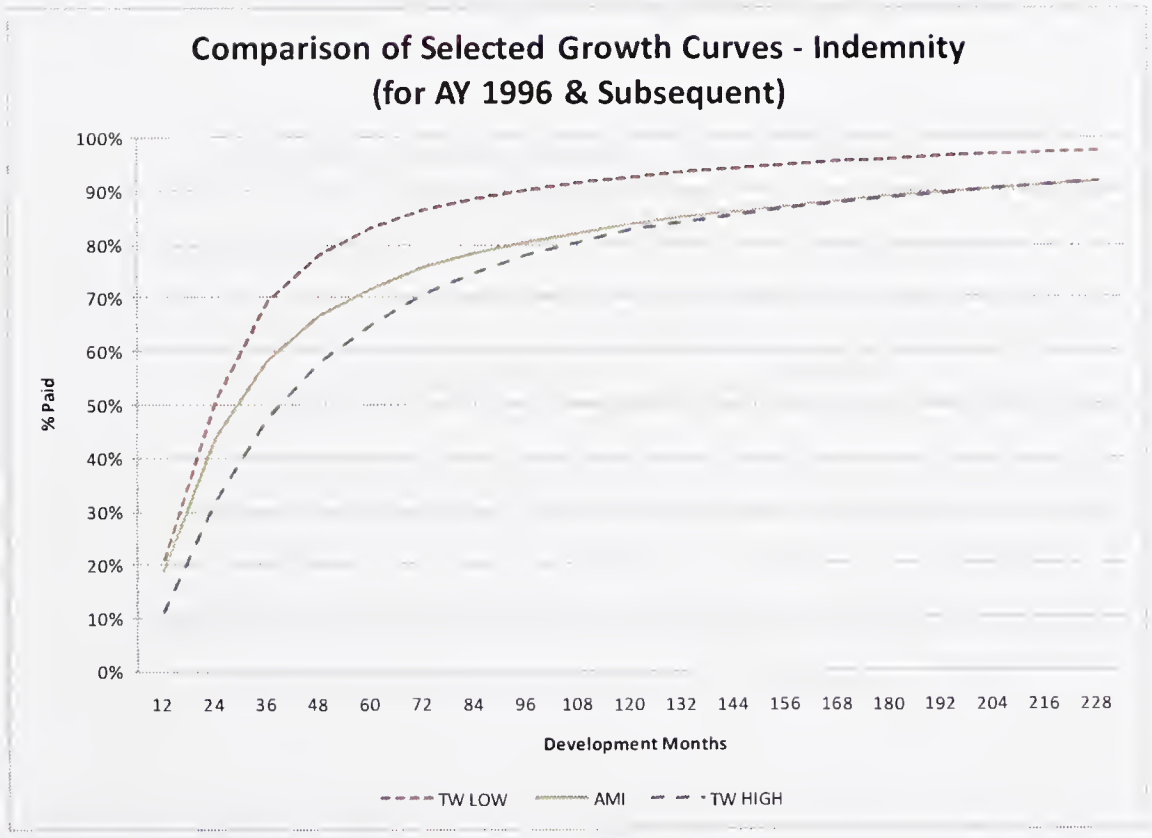
A comparison of our estimated Indemnity growth curves (1 divided by the selected cumulative factors) with TW's low and high factors are shown below:





B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

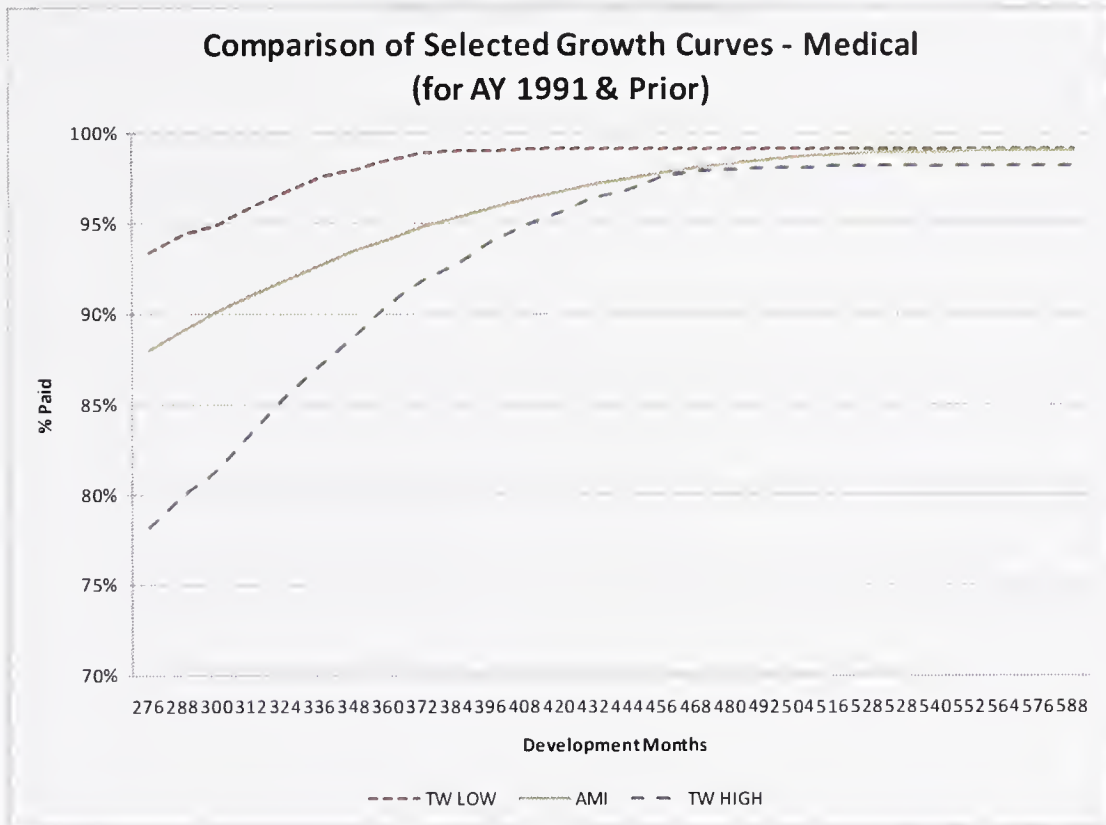


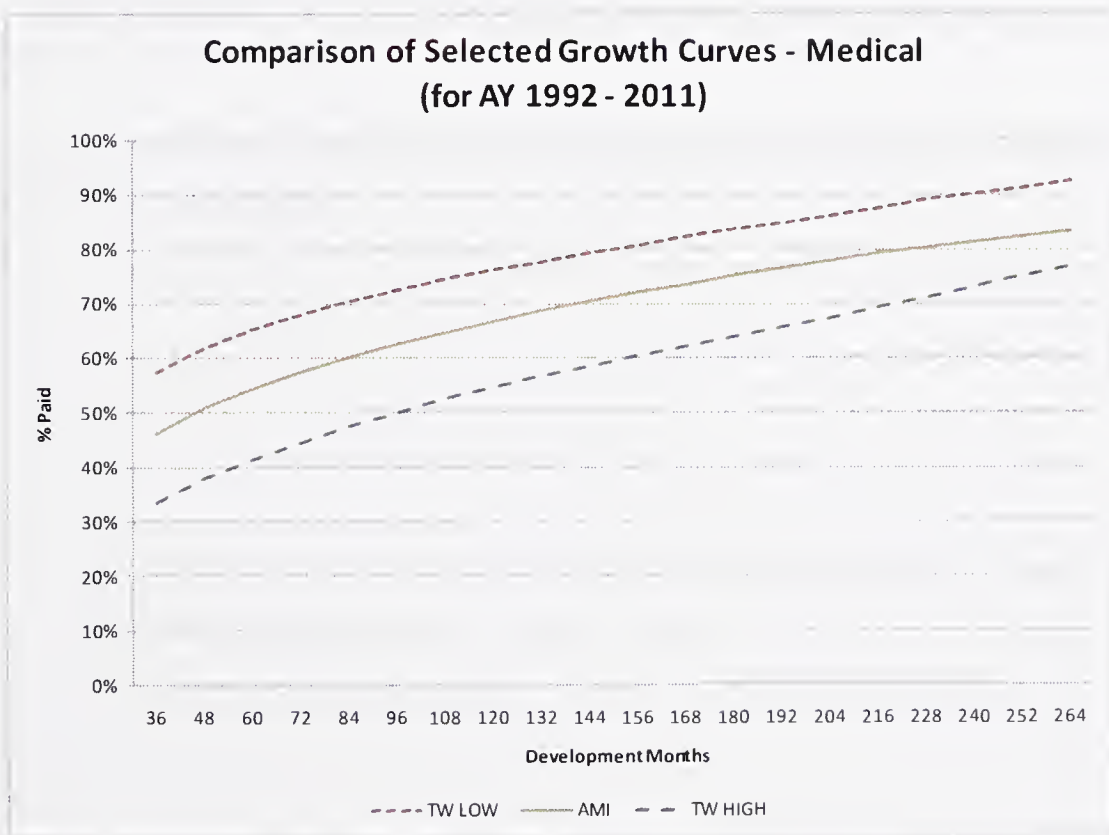


As can be seen, our estimated indemnity paid loss development factors are within TW's range.

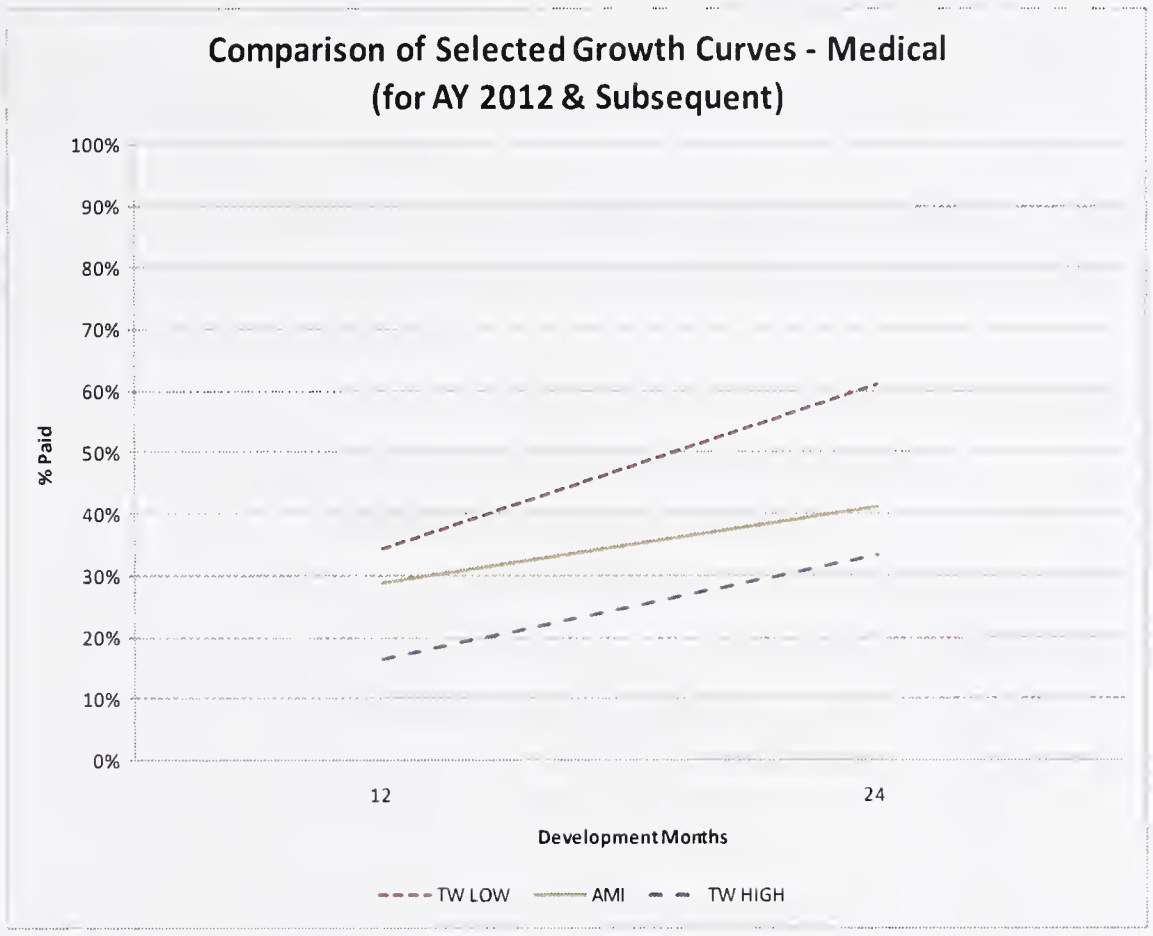
B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

As for Medical, the comparisons are shown below:





B2: Reasonableness of MSF's Loss and LAE Reserves (continued)



Our estimated medical paid loss development factors are also within TW's range.

Thus, it is our opinion that the development factors selected by TW are reasonable.

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Comparison of TW and AMI Selections – New Fund Ultimate Losses - Medical

The range of indicated New Fund ultimate Medical losses produced by TW's using the various methods are shown below, ranked from low to high:

TW Ultimate Loss Indications -New Fund Ranked from Low to High ($millions)	
Method	Medical
Paid Development – Low Factors	$1,451
Paid Dev. – Adjusted for Excess Settlements	1,697
Bornhuetter-Ferguson – Prior Ultimates	1,706
Bornhuetter-Ferguson – Freq-Sev Index	1,721
Frequency-Severity Index	1,737
Paid Development – Low/Hi Mixed Factors	1,782
Adjusted Case Reserves*	1,872
Paid Development – High Factors	2,078
Berquist-Sherman*	2,673
Selected Central Estimate	
TW	**1,707**
AMI	**1,756**

*Berquist-Sherman for latest two years and adjusted case reserve indication assumed to be the average of all other methods.

As shown above our selected ultimate loss for New Fund Medical is ***$49 million above TW***, and nearer to the middle of the range of Medical indications.

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Comparison of TW and AMI Selections – New Fund Ultimate Losses - Indemnity

The range of indicated New Fund ultimate Indemnity losses produced by TW's using the various methods are shown below, ranked from low to high:

TW Ultimate Loss Indications (New Fund) Ranked from Low to High ($millions)	
Method	Indemnity
Paid Development – Low Factors	$1,019
Adjusted Case Reserves*	1,043
Reported Development	1,047
Bornhuetter-Ferguson – Prior Ultimates	1,088
Bornhuetter-Ferguson – Freq-Sev Index	1,089
Born.-Ferg.– Freq-Sev Index – Excl. Lump Sum	1,089
Paid Dev. – Adj. for Excess Lump Sum	1,089
Frequency-Severity Index	1,099
Paid Development – Low/Hi Mixed Factors	1,136
Paid Development – High Factors	1,180
Selected Central Estimate	
TW	**1,083**
AMI	**1,096**

*Adjusted case reserve indication for latest year assumed to be the average of all other methods.

As shown above our selected ultimate loss for New Fund Indemnity is ***$13 million above TW***, and nearer to the average of the Indemnity indications.

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Comparison of TW and AMI Selections – New Fund LAE Factors

AMI selected slightly higher factors for ALAE and ULAE as the weighted average of unadjusted (for HB 334) factors and adjusted factors with our selected loss reserves by accident year. Adjusted factors were assumed to be appropriate for accident years 2011/2012 and later.

Comparison of LAE Factor Selections (New Fund) Loss Reserves				
	AMI Pre-HB 334	AMI Post HB 334	AMI Wtd Average	TW
ALAE	3.2%	3.7%	3.3%	3.2%
ULAE	11.0%	14.5%	11.6%	11.0%

AMI's post- HB 334 factors are consistent with TW's selections for ratemaking.

REVIEW OF LOSS AND LAE RESERVES AS OF JUNE 30, 2014 (continued)

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Opinion on MSF's Recorded Loss and LAE Reserves – New Fund

Based on our selections of ultimate losses and LAE factors as described above, our estimate of MSF's net loss and LAE reserves at June 30, 2014 is ***$924 million*** as derived below:

AMI Estimated Loss and LAE Reserves (New Fund) Central Estimate @6/30/14	
Component	$Millions
(1) AMI Selected Ultimate Loss	$2,851
(2) Paid Losses	2018
(3) Gross Loss Reserve (1) – (2)	833
(4) ALAE Reserve at 3.3%	27
(5) ULAE Reserve at 11.6%	97
(6) MSF Estimated Ceded Reserve	33
(7) Net Loss and LAE Reserve*	**$924**

*(7) = (3) + (4) + (5) – (6).

At June 30, 2014 MSF recorded net loss and LAE reserves of ***$924.5 Million, or 0.05% above AMI's central estimate.***

We note that TW's range of reasonable loss estimates extends from 2.7% below to 3.8% above their central estimate.

Our opinion, therefore, is that MSF's recorded reserves fall within a reasonable range of our central estimate, and ***we conclude that recorded reserves are reasonable.***

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Comparison of TW and AMI Selections – Old Fund Ultimate Losses - Medical

The range of indicated Old Fund ultimate Medical losses produced by TW's using the various methods are shown below, ranked from low to high:

TW Ultimate Loss Indications (Old Fund) Ranked from Low to High ($millions)	
Method	Medical
Paid Development – Low Factors	$431
Paid Development – High Factors	472
Adjusted Case Reserves	481
Sherman-Diss*	581
Berquist-Sherman**	604
Selected Central Estimate	
TW	**452**
AMI	**515**

*Sherman-Diss for 1977/1978 & prior assumed to be the average of all other methods.
**Berquist-Sherman for 1973/1974 & prior assumed to be the average of all other methods.

As shown above our selected ultimate loss for Old Fund Medical is ***$63 million above TW***, and nearer to the average of the Medical indications.

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Comparison of TW and AMI Selections – Old Fund Ultimate Losses - Indemnity

The range of indicated Old Fund ultimate Indemnity losses produced by TW's using the various methods are shown below, ranked from low to high:

TW Ultimate Loss Indications (Old Fund) Ranked from Low to High ($millions)	
Method	Indemnity
Paid Development – Low Factors	$780
Sherman-Diss*	793
Reported Development	796
Adjusted Case Reserves*	798
Paid Development – High Factors	800
Selected Central Estimate	
TW	**785**
AMI	**793**

*Sherman-Diss for 1977/1978 & prior assumed to be the average of all other methods.

As shown above our selected ultimate loss for Old Fund Indemnity is ***$8 million above TW***, and nearer to the average of the Indemnity indications.

REVIEW OF LOSS AND LAE RESERVES AS OF JUNE 30, 2014 (continued)

B2: Reasonableness of MSF's Loss and LAE Reserves (continued)

Opinion on TW's Selected Loss and LAE Reserves – Old Fund

Based on our selections of ultimate losses as described above, our estimate of the Old Fund's net loss and LAE reserves at June 30, 2014 is ***127 million*** as derived below:

AMI Estimated Loss and LAE Reserves (Old Fund) Central Estimate @6/30/14	
Component	$Millions
(1) AMI Selected Ultimate Loss	$1,308
(2) Paid Losses	1,199
(3) Gross Loss Reserve (1) – (2)	109
(4) ALAE Reserve at 3.5%	4
(5) ULAE Reserve at 9.5%	10
(6) DLI Assessments at 3.0%	4
(7) Net Loss and LAE Reserve*	**127**

*(7) = (3) + (4) + (5) + (6).

At June 30, 2014 TW's estimated Old Fund net loss and LAE reserves are ***$45.0 Million, or 64.6% below AMI's central estimate. Consequently, our estimated central estimate is above TW's range.***

REVIEW OF INFORMATION PROVIDED BY MSF TO CONTRACT ACTUARY

C1: Procedures Used by Contract Actuary to Test Data

The methodology used by TW in their rate level and reserve reviews rely on certain assumptions. For the conclusions to be reliable, these assumptions need to be validated for the data at hand.

Overall Rate Level and Reserve Analysis

TW prepared several diagnostic exhibits in section C of their Appendix separately for Medical and Indemnity. A list of these exhibits is shown below:

1. Ratio Incremental Paid to Open (Lag 1) – displays the changes in closure rates
2. Average Case Outstanding – shows the changing case reserve adequacy over time
3. Paid to Reported Ratio – used to identify changes in payment rates and/or case reserve adequacy
4. Ratio Closed Count to Ultimate Count – shows changes in the settlement rate of claims
5. Estimated IBNR Count
6. Open and Estimated IBNR Count
7. Paid Loss Incremental – identifies changes in payment rates, specifically trends in lump sum and excess payments
8. Reported Loss Incremental – shows the changing case reserve adequacy over time
9. Outstanding Losses
10. Closed Claim Count
11. Open Claim Count
12. Paid Losses / Ultimate Losses – shows payment rates across time
13. Average Outstanding Loss including IBNR – shows changes in reserve adequacy
14. IBNR Counts / Ultimate Counts – shows changes in claim settlement rates
15. Ratio of Paid Loss to Adjusted Reported Loss - identifies changes in payment rates and/or case reserve adequacy

REVIEW OF INFORMATION PROVIDED BY MSF TO CONTRACT ACTUARY (continued)

C1: Procedures Used by Contract Actuary to Test Data (continued)

Class Ratemaking

TW used individual policyholder exposure and claims database for accident years 2007 through 2011 in their multivariate models. Several data checks and verification were done to minimize the distortion in the results as well as to identify certain data elements that warranted further review, such as negative or blank cell entries. Other measures undertaken are listed below:

- Reconciling control totals with other databases;
- Performing univariate distribution analysis for each variable and by policy or claims year; and
- Matching premium and loss records by policy.

C2: Reliance Placed on Various Data Items

Aside from historical loss triangles, premiums, and exposure data, considerable reliance is placed by TW on certain data items that were provided directly by MSF which include most economic data and loss/expense loadings.

C3: Adequacy of Procedures Used by Contract Actuary to Test Data

Our opinion is that the procedures used by TW to test the data used in both ratemaking and reserving are adequate. We do not have any further testing to suggest.

RANKING OF DATA ELEMENTS

D1: Review of Data Elements

The following data elements were used by TW in their rate level and reserve analysis, as provided by MSF:

1. Historical paid and reported losses – used as a base to project losses to ultimate value by accident year. Used also in calculating the appropriate payment pattern for discounting purposes.
2. Historical closed, reported, and open claim counts – used in several diagnostic exhibits, Berquist-Sherman method, and Frequency-Severity Index method.
3. Historical premium, payroll, and expense data – used in computing the selected loss ratio and projected equity contributions
4. Rate change history – adjusts historical premiums to current rate level
5. Statutory benefit changes – adjusts historical loss data to current benefit level
6. Historical exposure, premium, and loss data for new and departed business – adjusts historical data to current mix of business
7. Internal MSF analyses on several court cases – used to identify its effect on Old Fund' claim payout patterns
8. Information on MSF operations – gives insights on any adjustments or considerations that should be taken throughout the analysis, as what TW did:
    a. Selecting different loss development factors for accident year groups to reflect changes in statutory benefit changes
    b. Acceleration of development patterns due to faster closure rates and improved claim operations
    c. Adjustment of estimates to reflect the impact of excess lump sum and settlements
    d. Use of more sophisticated methods to reflect the implementation of Claim Center in 2006
9. Economic statistics and forecasts – used regression analysis to predict trends
10. Individual policyholder exposure and claims database for accident years 2007 through 2011 – used for multivariate modeling of tier rate relativities
11. Impact on MSF's book of business of: July 1, 2014 NCCI loss costs, MSF proposed deviations and MSF special classes; current MSF rates; and proposed MSF rating programs – used to calculate the LCM multipliers

RANKING OF DATA ELEMENTS (continued)

D2: Ranking of Data Elements

In this section we will rank the data elements used for each analysis in terms of risk that erroneous data could materially affect the results.

Ranking of Data Elements Used in Ratemaking

It is our opinion that the following items greatly affects the rate level sensitivities to errors and thus are given high ranking:

1. Historical paid and reported losses – historical loss information is the starting point for any ratemaking analysis since the rates are mostly composed of the loss provision. TW relied more on the paid development triangles due to the inconsistent case reserving present in the reported triangles. If the historical losses are distorted and not accounted for, loss projections would also be greatly distorted. It's not just the current year's data that is at issue but the whole history itself. This potential distortion would be further compounded since the payment patterns used in determining the discount factors are also calculated from the historical paid triangles.
2. Information on MSF operations – changes in the claims environment can invalidate the assumptions of most actuarial methods. However, TW took every effort to take into account these changes by making several selections and actuarial methods as described in the previous section. If these were not done, material distortions could result in the projections.

A vital step in any ratemaking analysis is the ability to combine historical experience in determining projected indications. However, adjustments need to be done in order to combine data that are on-level with the projection period. The following data items were used by TW to calculate these on-level factors and are given slightly lesser rankings than the first two items.

3. Historical closed, reported, and open claim counts
4. Historical premium, payroll, and expense data
5. Rate change history
6. Statutory benefit changes
7. Historical exposure, premium, and loss data for new and departed business
8. Economic statistics and forecasts

RANKING OF DATA ELEMENTS (continued)

D2: Ranking of Data Elements (continued)

After the overall rate level has been determined, the class rates have to be brought on-level as well. TW calculated rate relativities using a multivariate model to accomplish this. However, these rate relativities rely on the assumption that the overall rate level is accurate, thus are given lesser rankings than the previous items.

9. Individual policyholder exposure and claims database for accident years 2007 through 2011
10. Impact on MSF's book of business of: July 1, 2014 NCCI loss costs, MSF proposed deviations and MSF special classes; current MSF rates; and proposed MSF rating programs

Ranking of Data Elements Used in Reserving

It is our opinion that the following items greatly affects the reserve estimate sensitivities to errors and thus are given high ranking:

1. Historical paid and reported losses – as in the case for ratemaking, the reserving process starts off with the projection of loss amounts to ultimate. Thus, the same distortions and inconsistencies could affect the results if not properly accounted for.
2. Information on MSF operations – as also the case in ratemaking, changes in the claims environment can invalidate the assumptions of most actuarial methods. Similarly, TW accounted for these changes in their analyses.
3. Internal MSF analyses on several court cases – large claims tend to develop differently than the other claims and could materially affect the development in future periods. TW took this into consideration by reviewing these cases with MSF.

RANKING OF DATA ELEMENTS (continued)

D2: Ranking of Data Elements (continued)

A common approach in reserving is to estimate ultimate losses by accident year. In some cases, it is also desirable to have single estimate based on the combined experience for a more credible estimate. However, adjustments need to be done in order to combine data that are on-level with a common projection period. The following data items were used by TW to calculate these on-level factors and are given slightly lesser rankings than the first three items.

4. Historical closed, reported, and open claim counts
5. Historical premium, payroll, and expense data
6. Rate change and statutory benefit change history
7. Historical exposure, premium, and loss data for new and departed business
8. Economic statistics and forecast

ATTACHED EXHIBITS

The following exhibits are attached to this report:

- Summary Exhibit
  - Page 1 shows our projected equity contribution at an effective rate change of 0.0% as compared to TW
  - Page 2 shows our estimated reserves as compared to TW
- Exhibit I – AMI Projected Contribution to Equity
- Exhibit II – AMI Selected Ultimate Losses
  - Page 1 shows our selected ultimate losses by accident year for the New Fund
  - Page 2 shows our selected ultimate losses by accident year for the Old Fund
- Exhibit III – AMI Selected Paid Loss Development Factors (Medical)
  - Page 1 shows a comparison of our selected paid loss development patterns with TW
  - Page 2 shows the fitted development factors using the Clark LDF approach
  - Page 3 shows the selected credibility-weighted factors
  - Page 4 shows the historical cumulative paid triangles for Medical
- Exhibit IV – AMI Selected Paid Loss Development Factors (Indemnity)
  - Page 1 shows a comparison of our selected paid loss development patterns with TW
  - Page 2 shows the fitted development factors using the Clark LDF approach
  - Page 3 shows the selected credibility-weighted factors
  - Page 4 shows the historical cumulative paid triangles for Indemnity

Attached as Appendix A is an outline of our analysis regarding the different methods used by TW in projecting the ultimate losses by accident year.

III. ACTUARIAL EXHIBITS

MONTANA STATE FUND

RATE LEVEL ACTUARIAL REVIEW

FOR THE EXPOSURE PERIOD JULY 1, 2014 TO JUNE 30, 2015
COMPARISON OF ASSUMPTIONS AND PROJECTED EQUITY CONTRIBUTIONS
WORKERS' COMPENSATION

	TOWERS WATSON		AMI		Difference
1. SELECTED ULTIMATE LOSS RATIO	66.8%		69.9%		-3.16%
2. EMPLOYERS' LIABILITY	0.25%		0.25%		-
3. CEDED LOSSES	0.50%		0.00%		0.50%
4. LOSS LOADINGS	5.7%		0.8%		4.90%
4a. Adverse Deviation	5.0%		0.0%		5.00%
4b. Terrorism	0.7%		0.8%		-
5. EXPENSE PROVISIONS					
5a. Loss Adjustment Expenses	18.2%		18.2%		-
5b. Commissions	6.4%		6.4%		-
5c. Other Expenses	12.6%		12.6%		-
5d. Revenue Generated by Expense Constant	2.4%		2.4%		-
5e. Variable Reinsurance Costs	2.3%		0.0%		2.30%
5f. Fixed Reinsurance Costs	0.3%		0.0%		0.30%
6. RATE CHANGE	0.0%		0.0%		-
7. PRICING PROGRAMS	6.5%		6.5%		-
8. TERRORISM LOAD	0.7%		0.7%		-
10. INVESTMENT YIELD	11a. INDICATED CONTRIBUTION TO EQUITY	12a. DISCOUNT FACTOR	11b. INDICATED CONTRIBUTION TO EQUITY	12b. DISCOUNT FACTOR	
0.00%	-8.1%	1.000	-6.0%	1.000	-2.12%
2.25%	1.2%	0.895	3.1%	0.895	-1.91%
2.50%	2.0%	0.886	3.9%	0.886	-1.89%
2.75%	2.8%	0.877	4.7%	0.877	-1.87%
3.00%	3.6%	0.868	5.4%	0.868	-1.85%

Notes:
Towers Watson column per Towers Watson 7/1/2014 Rate Level Analysis report.
AMI column per Exhibit I.
Difference = Towers Watson - AMI.

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW

AS OF JUNE 30, 2014
COMPARISON OF ESTIMATED LOSS & LAE RESERVES
WORKERS' COMPENSATION
($Amounts in Millions)

LOSSES EXCLUDING LAE

COVERAGE	TOWERS WATSON			AMI
	LOW	CENTRAL	HIGH	CENTRAL
	(1)	(2)	(3)	(4)
OLD FUND	**$35.2**	**$38.8**	**$78.1**	**$109.4**
MEDICAL	$27.5	$30.3	$67.6	$92.3
INDEMNITY	$7.7	$8.5	$10.5	$17.1
NEW FUND	**$695.6**	**$771.9**	**$878.4**	**$833.3**
MEDICAL	$542.6	$602.9	$693.3	$651.5
INDEMNITY	$153.0	$169.0	$185.1	$181.7
TOTAL	**$730.8**	**$810.8**	**$956.5**	**$942.7**

LOSSES & LAE (NET OF CEDED)

COVERAGE	TOWERS WATSON			AMI
	LOW	CENTRAL	HIGH	CENTRAL
	(5)	(6)	(7)	(8)
OLD FUND	**$40.8**	**$45.0**	**$90.6**	**$126.9**
NEW FUND	**$757.3**	**$844.4**	**$966.1**	**$924.4**
TOTAL	**$798.1**	**$889.4**	**$1,056.7**	**$1,051.4**

LOSSES & LAE (NET OF CEDED)

	NEW FUND		
	LOW	CENTRAL	HIGH
	(9)	(10)	(11)
RECORDED		$924.5	
TOWERS WATSON	757.3	844.4	966.1
DIFFERENCE	167.2	80.1	(41.6)
AMI		924.4	
DIFFERENCE		0.1	

Notes:
(1), (2), (3), (5), (6), & (7) - Per Towers Watson 6/30/2014 Reserve Review report.
(4) - Per Exhibit II, Page 1, Columns (4) & (8) less the cumulative paid losses @6/30/2014.
For Old Fund, (8) = (4) × (1 + ALAE loading of 3.5+%, ULAE loading of 9.5%, and DLI assessments of 3.0%).
For New Fund, (8) = (4) × (1 + ALAE loading of 3.3%, ULAE loading of 11.6%).
(9), (10), & (11) - per (5), (6), (7), & (8) for New Fund. Recorded per MONTANA STATE FUND.

MONTANA STATE FUND
RATE LEVEL ACTUARIAL REVIEW
FOR THE EXPOSURE PERIOD JULY 1, 2014 TO JUNE 30, 2015
CALCULATION OF PROJECTED EQUITY CONTRIBUTION
WORKERS' COMPENSATION

ACCIDENT YEAR*	ULTIMATE LOSS RATIO
	(1)
2007	0.628
2008	0.657
2009	0.623
2010	0.627
2011	0.657
2012	0.702
2013	0.689

2. SELECTED ULTIMATE LOSS RATIO	69.9%
3. EMPLOYERS' LIABILITY	0.25%
4. CEDED LOSSES	0.00%
5. LOSS LOADINGS	0.8%
5a. Adverse Deviation	0.0%
5b. Terrorism	0.8%
6. EXPENSE PROVISIONS	
6a. Loss Adjustment Expenses	18.2%
6b. Commissions	6.4%
6c. Other Expenses	12.6%
6d. Revenue Generated by Expense Constant	2.4%
6e. Variable Reinsurance Costs	0.0%
6f. Fixed Reinsurance Costs	0.0%
7. RATE INCREASE	0.0%
8. PRICING PROGRAMS	6.5%
9. TERRORISM LOAD	0.7%

10. INVESTMENT YIELD	11. INDICATED CONTRIBUTION TO EQUITY	12. DISCOUNT FACTOR
0.00%	-6.0%	1.000
2.25%	3.1%	0.895
2.50%	3.9%	0.886
2.75%	4.7%	0.877
3.00%	5.4%	0.868

Notes:
(1) - Towers Watson's current mix on-level loss ratio trended to 2014/2015 multiplied by the ratio AMI's selected ultimates per Exhibit II, Page 1, Columns (4) + (8) and Towers Watson's selected ultimates.
(2) - Per AMI selection, based on (1).
(3), (5b), (6a) (6b), (6c), (6d), (7), (8), (9), & (10) - Per MONTANA STATE FUND.
(4) = 0.0%; (5a) = 0.0%; (6e) = 0.0%; & (6f) = 0.0%.
(11) - 1.0 - (6b) - {[(2) + (3) - (4)] × [1 + (5)] × [1 + (6a)] × (12) + (6c)} / {[[1 + (7)] × [1 - (8)] + (6d)] × [1 - (6e)] - (6f) + (9)}.
(12) - Per Towers Watson 7/1/2014 Rate Level Analysis report.
* All Accident Years are 12-month periods ending 6/30 of the stated year.

RATE LEVEL ACTUARIAL REVIEW
FOR THE EXPOSURE PERIOD JULY 1, 2014 TO JUNE 30, 2015
COMPARISON OF ULTIMATE LOSSES
FOR THE PERIOD JULY 1, 2014 TO JUNE 30, 2015
WORKERS' COMPENSATION
NEW FUND
(AMTS IN $000's)

MEDICALBENEFITS

ACCIDENT YEAR*	TOWERS WATSON AVERAGE INDICATION			AMI SELECTED CENTRAL
	ALL METHODS	EXCLUDING BERQUIST-SHERMAN	EXCLUDING HIGH & LOW	
	(1)	(2)	(3)	(4)
1991	$61,711	$58,145	$59,417	$58,145
1992	59,957	56,848	57,691	56,848
1993	63,886	60,340	61,177	60,340
1994	59,964	56,777	57,752	56,777
1995	53,122	50,636	51,491	50,636
1996	47,700	45,627	46,353	45,627
1997	45,372	43,108	43,840	43,108
1998	49,786	46,675	47,672	46,675
1999	56,640	52,951	54,038	52,951
2000	53,230	50,229	51,321	50,229
2001	68,040	63,969	65,253	63,969
2002	69,382	65,066	66,464	65,066
2003	87,696	82,174	83,988	82,174
2004	85,867	81,016	82,960	81,016
2005	98,184	91,955	94,102	91,955
2006	108,440	102,382	104,723	102,382
2007	114,381	107,270	109,972	107,270
2008	123,622	115,770	118,928	115,770
2009	102,730	96,037	98,876	96,037
2010	94,492	89,673	92,124	89,673
2011	101,284	94,785	97,727	94,785
2012	88,806	80,911	83,512	80,911
2013	74,589	74,589	73,403	74,589
2014	88,737	88,737	88,031	88,737
TOTAL	**$1,857,618**	**$1,755,669**	**$1,790,814**	**$1,755,669**

INDEMNITY BENEFITS

ACCIDENT YEAR*	TOWERS WATSON AVERAGE INDICATION			AMI SELECTED CENTRAL
	ALL METHODS	EXCLUDING BERQUIST-SHERMAN	EXCLUDING HIGH & LOW	
	(5)	(6)	(7)	(8)
1991	$67,017	N/A	$66,885	$67,017
1992	67,223	N/A	67,239	67,223
1993	61,826	N/A	61,802	61,826
1994	56,084	N/A	55,734	56,084
1995	48,112	N/A	47,787	48,112
1996	36,823	N/A	36,705	36,823
1997	29,847	N/A	29,731	29,847
1998	30,501	N/A	30,369	30,501
1999	33,429	N/A	33,271	33,429
2000	32,554	N/A	32,412	32,554
2001	38,741	N/A	38,779	38,741
2002	39,119	N/A	38,913	39,119
2003	47,813	N/A	47,509	47,813
2004	45,791	N/A	45,502	45,791
2005	48,427	N/A	48,058	48,427
2006	56,007	N/A	55,590	56,007
2007	56,759	N/A	56,418	56,759
2008	55,216	N/A	54,709	55,216
2009	49,019	N/A	48,442	49,019
2010	39,195	N/A	38,629	39,195
2011	41,517	N/A	40,979	41,517
2012	40,034	N/A	38,913	40,034
2013	35,695	N/A	34,719	35,695
2014	38,856	N/A	37,004	38,856
TOTAL	**$1,095,604**	**N/A**	**$1,086,100**	**$1,095,604**

Notes:
(1), (2), (3), (5), (6), & (7) - Per Towers Watson 6/30/2013 Reserve Review repor
(4) - selected based on (1), (2) & (3); (8) - selected based on (5), (6), & (7)
* All Accident Years are 12-month periods ending 6/30 of the stated yea

RATE LEVEL ACTUARIAL REVIEW

FOR THE EXPOSURE PERIOD JULY 1, 2014 TO JUNE 30, 2015
COMPARISON OF ULTIMATE LOSSES
FOR THE PERIOD JULY 1, 2014 TO JUNE 30, 2015
WORKERS' COMPENSATION
OLD FUND
(AMTS IN $000's)

MEDICALBENEFITS

ACCIDENT YEAR*	TOWERS WATSON AVERAGE INDICATIONS			AMI SELECTED CENTRAL
	ALL METHODS	EXCLUDING BERQUIST-SHERMAN	EXCLUDING BERQUIST-SHERMAN & SHERMAN-DISS	
	(1)	(2)	(3)	(4)
1964 & Prior	$971	$971	$971	$971
1965	960	960	960	960
1966	1,287	1,287	1,287	1,287
1967	1,245	1,245	1,245	1,245
1968	1,386	1,386	1,386	1,386
1969	1,425	1,425	1,425	1,425
1970	1,648	1,648	1,648	1,648
1971	2,602	2,602	2,602	2,602
1972	1,911	1,911	1,911	1,911
1973	2,061	2,061	2,061	2,061
1974	6,020	6,020	6,020	6,020
1975	5,724	5,597	5,554	5,724
1976	6,219	6,118	6,084	6,219
1977	13,861	13,383	13,224	13,861
1978	9,147	8,989	8,936	9,147
1979	11,756	11,528	11,180	11,756
1980	15,832	15,330	15,197	15,832
1981	20,226	19,704	19,152	20,226
1982	22,094	21,584	20,852	22,094
1983	30,220	29,100	26,447	30,220
1984	40,783	38,602	35,752	40,783
1985	37,282	35,742	34,572	37,282
1986	47,630	45,714	42,089	47,630
1987	54,244	51,001	47,102	54,244
1988	57,972	54,650	50,978	57,972
1989	50,465	47,962	44,378	50,465
1990	69,648	65,513	59,176	69,648
TOTAL	**$514,620**	**$492,032**	**$462,191**	**$514,620**

INDEMNITY BENEFITS

ACCIDENT YEAR*	TOWERS WATSON AVERAGE INDICATIONS			AMI SELECTED CENTRAL
	ALL METHODS	EXCLUDING SHERMAN-DISS	PLDA-LOW & SHERMAN-DISS	
	(5)	(6)	(7)	(8)
1964 & Prior	$112	$112	$112	$112
1965	2,289	2,289	2,286	2,289
1966	3,157	3,157	3,154	3,157
1967	3,094	3,094	3,091	3,094
1968	3,593	3,593	3,589	3,593
1969	3,869	3,869	3,865	3,869
1970	4,262	4,262	4,257	4,262
1971	4,382	4,382	4,377	4,382
1972	4,659	4,659	4,645	4,659
1973	4,709	4,709	4,703	4,709
1974	8,738	8,738	8,663	8,738
1975	9,949	9,949	9,876	9,949
1976	9,277	9,277	9,254	9,277
1977	13,208	13,208	13,006	13,208
1978	18,363	18,363	18,265	18,363
1979	21,541	21,514	21,432	21,541
1980	31,297	31,210	31,040	31,297
1981	35,909	35,879	35,520	35,909
1982	44,937	44,839	44,508	44,937
1983	52,276	52,147	51,753	52,276
1984	72,514	72,402	71,852	72,514
1985	79,464	79,452	78,774	79,464
1986	84,911	84,958	84,070	84,911
1987	86,696	86,792	85,872	86,696
1988	62,861	62,964	62,388	62,861
1989	61,161	61,297	60,648	61,161
1990	66,190	66,388	65,578	66,190
TOTAL	**$793,418**	**$793,503**	**$786,578**	**$793,418**

Notes:
(1), (2), (3), (5), (6), & (7) - Per Towers Watson 6/30/2013 Reserve Review report.
(4) - selected based on (1), (2) & (3); (8) - selected based on (5), (6), & (7).
* All Accident Years are 12-month periods ending 6/30 of the stated year.

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
COMPARISON OF LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

	ACCIDENT YEARS 1991 & PRIOR*			ACCIDENT YEARS 1992 - 2011*			ACCIDENT YEARS 2012 & SUBSEQUENT*		
DEVELOPMENT MONTH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12	3.938	6.515	7.924	3.585	4.306	7.374	2.904	3.470	6.091
24	2.111	3.568	3.673	2.015	2.554	3.638	1.638	2.426	2.982
36	1.780	2.783	2.863	1.740	2.168	2.959	1.415	2.097	2.422
48	1.636	2.385	2.483	1.612	1.970	2.629	1.312	1.911	2.151
60	1.557	2.132	2.234	1.532	1.841	2.414	1.247	1.783	1.973
72	1.498	1.957	2.087	1.471	1.742	2.237	1.213	1.688	1.852
84	1.454	1.823	1.968	1.422	1.665	2.106	1.185	1.614	1.762
96	1.413	1.719	1.903	1.383	1.603	2.000	1.168	1.554	1.694
108	1.377	1.634	1.846	1.346	1.547	1.902	1.151	1.504	1.631
120	1.347	1.561	1.794	1.316	1.500	1.832	1.136	1.461	1.586
132	1.317	1.500	1.748	1.289	1.457	1.764	1.125	1.424	1.544
144	1.289	1.449	1.698	1.264	1.421	1.708	1.114	1.391	1.508
156	1.266	1.400	1.654	1.241	1.390	1.656	1.103	1.363	1.475
168	1.242	1.357	1.612	1.218	1.360	1.609	1.092	1.337	1.446
180	1.219	1.320	1.569	1.199	1.334	1.563	1.083	1.314	1.416
192	1.196	1.287	1.526	1.181	1.309	1.524	1.075	1.293	1.390
204	1.176	1.258	1.488	1.163	1.286	1.485	1.066	1.273	1.364
216	1.153	1.232	1.448	1.144	1.265	1.444	1.057	1.256	1.336
228	1.133	1.208	1.409	1.125	1.246	1.406	1.047	1.239	1.311
240	1.116	1.187	1.373	1.110	1.229	1.370	1.040	1.224	1.285
252	1.100	1.168	1.339	1.097	1.214	1.336	1.034	1.210	1.261
264	1.084	1.151	1.307	1.082	1.200	1.304	1.026	1.197	1.238
276	1.071	1.136	1.280	1.069	1.188	1.276	1.019	1.184	1.218
288	1.060	1.122	1.251	1.058	1.175	1.248	1.014	1.173	1.197
300	1.054	1.110	1.230	1.052	1.164	1.227	1.012	1.162	1.181
312	1.043	1.098	1.198	1.042	1.153	1.195	1.008	1.152	1.156
324	1.034	1.088	1.169	1.032	1.143	1.166	1.004	1.142	1.134
336	1.025	1.078	1.147	1.024	1.134	1.144	1.000	1.133	1.117
348	1.020	1.070	1.126	1.020	1.125	1.124	0.999	1.124	1.101
360	1.015	1.062	1.104	1.015	1.116	1.102	0.998	1.116	1.084
372	1.011	1.055	1.088	1.011	1.108	1.088	0.997	1.108	1.072
384	1.011	1.049	1.077	1.011	1.100	1.077	0.998	1.100	1.064
396	1.010	1.043	1.064	1.010	1.093	1.064	0.999	1.093	1.052
408	1.009	1.038	1.053	1.009	1.086	1.053	1.000	1.086	1.044
420	1.009	1.033	1.045	1.009	1.079	1.045	1.001	1.079	1.037
432	1.009	1.029	1.036	1.009	1.073	1.036	1.002	1.073	1.029
444	1.009	1.025	1.032	1.009	1.066	1.032	1.003	1.067	1.026
456	1.009	1.022	1.025	1.009	1.060	1.025	1.004	1.061	1.020
468	1.009	1.020	1.021	1.009	1.055	1.021	1.005	1.055	1.017
480	1.009	1.017	1.020	1.009	1.049	1.020	1.005	1.049	1.016
492	1.009	1.015	1.019	1.009	1.044	1.019	1.005	1.044	1.015
504	1.009	1.014	1.019	1.009	1.039	1.019	1.005	1.039	1.015
516	1.009	1.012	1.018	1.009	1.034	1.018	1.005	1.034	1.014
528	1.009	1.011	1.018	1.009	1.029	1.018	1.005	1.029	1.014
540	1.009	1.011	1.018	1.009	1.029	1.018	1.005	1.029	1.014
552	1.009	1.011	1.018	1.009	1.025	1.018	1.005	1.025	1.014
564	1.009	1.010	1.018	1.009	1.020	1.018	1.005	1.020	1.014
576	1.009	1.010	1.018	1.009	1.016	1.018	1.005	1.016	1.014
588	1.009	1.010	1.018	1.009	1.012	1.018	1.005	1.012	1.014
600	1.009	1.010	1.018	1.009	1.008	1.018	1.005	1.008	1.014

Notes:
(1), (3), (4), (6), (7), & (9) - Per Towers Watson 6/30/2013 Reserve Review report.
(2), (5), & (8) - Per Column (6) of Exhibit III, Pages 3A, 3B, & 3C respectively.
* All Accident Years are 12-month periods ending 6/30 of the stated year.

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

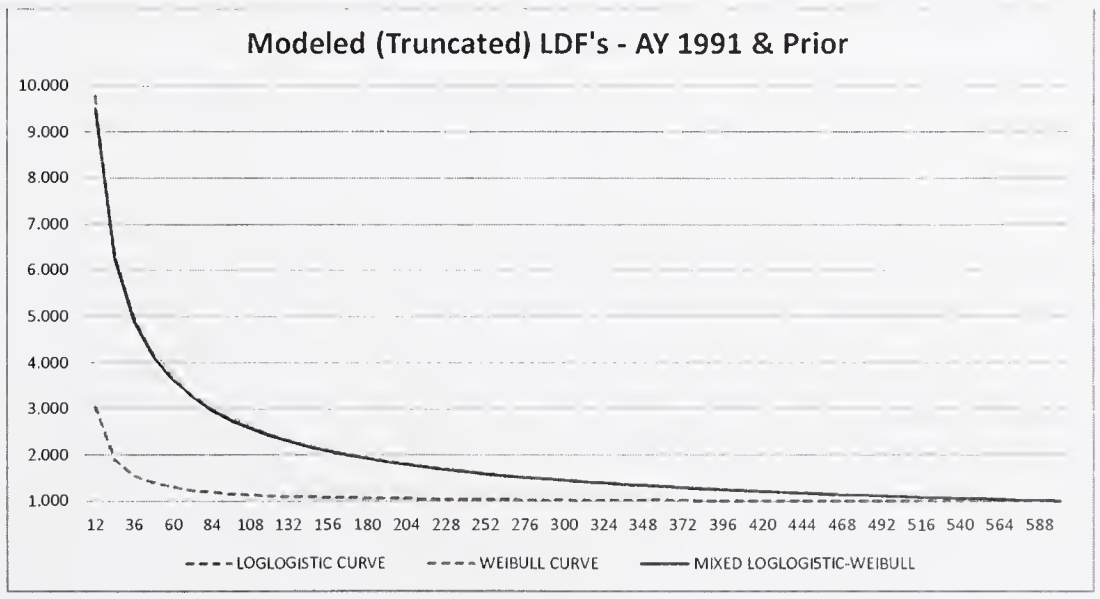
*ACCIDENT YEARS 1991 & PRIOR**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	3.113	3.046	34.764	9.770	30.865	9.509
24	1.946	1.904	22.846	6.420	20.272	6.245
36	1.592	1.557	17.904	5.031	15.894	4.897
48	1.424	1.393	15.076	4.237	13.394	4.126
60	1.327	1.298	13.203	3.710	11.740	3.617
72	1.265	1.237	11.853	3.331	10.549	3.250
84	1.222	1.195	10.825	3.042	9.642	2.970
96	1.190	1.164	10.010	2.813	8.924	2.749
108	1.166	1.140	9.345	2.626	8.337	2.569
120	1.147	1.122	8.790	2.470	7.848	2.418
132	1.131	1.107	8.317	2.337	7.432	2.290
144	1.119	1.094	7.910	2.223	7.074	2.179
156	1.108	1.084	7.554	2.123	6.760	2.083
168	1.099	1.075	7.240	2.035	6.484	1.997
180	1.092	1.068	6.960	1.956	6.238	1.922
192	1.085	1.061	6.709	1.886	6.017	1.854
204	1.079	1.056	6.482	1.822	5.817	1.792
216	1.074	1.051	6.276	1.764	5.635	1.736
228	1.070	1.046	6.088	1.711	5.470	1.685
240	1.066	1.043	5.915	1.662	5.317	1.638
252	1.062	1.039	5.755	1.617	5.177	1.595
264	1.059	1.036	5.607	1.576	5.047	1.555
276	1.056	1.033	5.470	1.537	4.926	1.518
288	1.053	1.030	5.342	1.501	4.814	1.483
300	1.051	1.028	5.223	1.468	4.709	1.451
312	1.048	1.026	5.111	1.436	4.610	1.420
324	1.046	1.024	5.005	1.407	4.518	1.392
336	1.044	1.022	4.906	1.379	4.431	1.365
348	1.043	1.020	4.813	1.353	4.348	1.340
360	1.041	1.018	4.724	1.328	4.271	1.316
372	1.039	1.017	4.641	1.304	4.197	1.293
384	1.038	1.016	4.561	1.282	4.127	1.271
396	1.037	1.014	4.485	1.261	4.061	1.251
408	1.035	1.013	4.414	1.240	3.997	1.232
420	1.034	1.012	4.345	1.221	3.937	1.213
432	1.033	1.011	4.279	1.203	3.880	1.195
444	1.032	1.010	4.217	1.185	3.825	1.178
456	1.031	1.009	4.157	1.168	3.772	1.162
468	1.030	1.008	4.100	1.152	3.722	1.147
480	1.029	1.007	4.045	1.137	3.673	1.132
492	1.029	1.006	3.992	1.122	3.627	1.117
504	1.028	1.005	3.941	1.107	3.582	1.104
516	1.027	1.005	3.892	1.094	3.539	1.090
528	1.026	1.004	3.845	1.081	3.498	1.078
540	1.026	1.003	3.800	1.068	3.458	1.065
552	1.025	1.003	3.756	1.055	3.419	1.053
564	1.024	1.002	3.714	1.044	3.382	1.042
576	1.024	1.002	3.673	1.032	3.347	1.031
588	1.023	1.001	3.633	1.021	3.312	1.020
600	1.023	1.001	3.595	1.010	3.278	1.010

Assumptions:

Loglogistic	
Scale	22.9
Shape	1.16
Weibull	
Scale	3694.1
Shape	0.62
Weight to Loglogistic	0.123
Weight to Weibull	0.877
LDF Truncated at Age	612

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 612; (4) = (3) / (3) at age 612.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

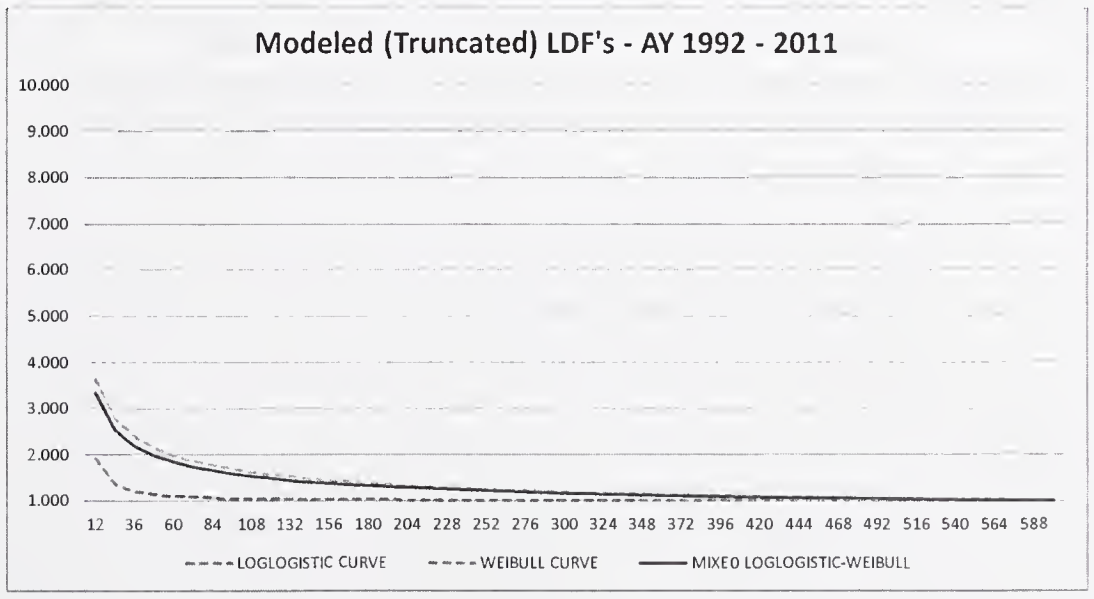
*ACCIDENT YEARS 1992 - 2011**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	1.930	1.921	5.153	3.631	4.452	3.350
24	1.361	1.355	3.940	2.776	3.379	2.543
36	1.208	1.202	3.386	2.386	2.912	2.191
48	1.140	1.135	3.050	2.149	2.634	1.982
60	1.103	1.099	2.818	1.985	2.445	1.840
72	1.081	1.076	2.644	1.863	2.304	1.734
84	1.065	1.061	2.509	1.768	2.195	1.652
96	1.055	1.050	2.399	1.691	2.107	1.585
108	1.046	1.042	2.308	1.626	2.033	1.530
120	1.040	1.036	2.230	1.571	1.971	1.483
132	1.035	1.031	2.163	1.524	1.918	1.443
144	1.031	1.027	2.104	1.483	1.871	1.408
156	1.028	1.024	2.053	1.446	1.830	1.377
168	1.025	1.021	2.006	1.414	1.793	1.349
180	1.023	1.019	1.965	1.384	1.760	1.324
192	1.021	1.017	1.927	1.358	1.730	1.302
204	1.019	1.015	1.892	1.334	1.703	1.281
216	1.018	1.014	1.861	1.311	1.678	1.262
228	1.017	1.012	1.832	1.291	1.655	1.245
240	1.016	1.011	1.805	1.272	1.633	1.229
252	1.015	1.010	1.780	1.254	1.614	1.214
264	1.014	1.009	1.757	1.238	1.595	1.200
276	1.013	1.009	1.735	1.223	1.578	1.188
288	1.012	1.008	1.715	1.208	1.562	1.175
300	1.012	1.007	1.696	1.195	1.547	1.164
312	1.011	1.007	1.678	1.182	1.533	1.153
324	1.010	1.006	1.661	1.170	1.519	1.143
336	1.010	1.005	1.645	1.159	1.507	1.134
348	1.009	1.005	1.630	1.148	1.495	1.125
360	1.009	1.005	1.615	1.138	1.483	1.116
372	1.009	1.004	1.601	1.128	1.472	1.108
384	1.008	1.004	1.588	1.119	1.462	1.100
396	1.008	1.004	1.576	1.110	1.452	1.093
408	1.008	1.003	1.564	1.102	1.443	1.086
420	1.007	1.003	1.552	1.094	1.434	1.079
432	1.007	1.003	1.542	1.086	1.425	1.073
444	1.007	1.002	1.531	1.079	1.417	1.066
456	1.007	1.002	1.521	1.072	1.409	1.060
468	1.006	1.002	1.511	1.065	1.401	1.055
480	1.006	1.002	1.502	1.058	1.394	1.049
492	1.006	1.002	1.493	1.052	1.387	1.044
504	1.006	1.001	1.485	1.046	1.380	1.039
516	1.005	1.001	1.476	1.040	1.374	1.034
528	1.005	1.001	1.468	1.035	1.368	1.029
540	1.005	1.001	1.461	1.029	1.361	1.025
552	1.005	1.001	1.453	1.024	1.356	1.020
564	1.005	1.001	1.446	1.019	1.350	1.016
576	1.005	1.000	1.439	1.014	1.344	1.012
588	1.005	1.000	1.432	1.009	1.339	1.008
600	1.004	1.000	1.426	1.004	1.334	1.004

Assumptions:

Loglogistic	
Scale	11.4
Shape	1.36
Weibull	
Scale	390.0
Shape	0.44
Weight to Loglogistic	0.218
Weight to Weibull	0.782
LDF Truncated at Age	612

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 612; (4) = (3) / (3) at age 612.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

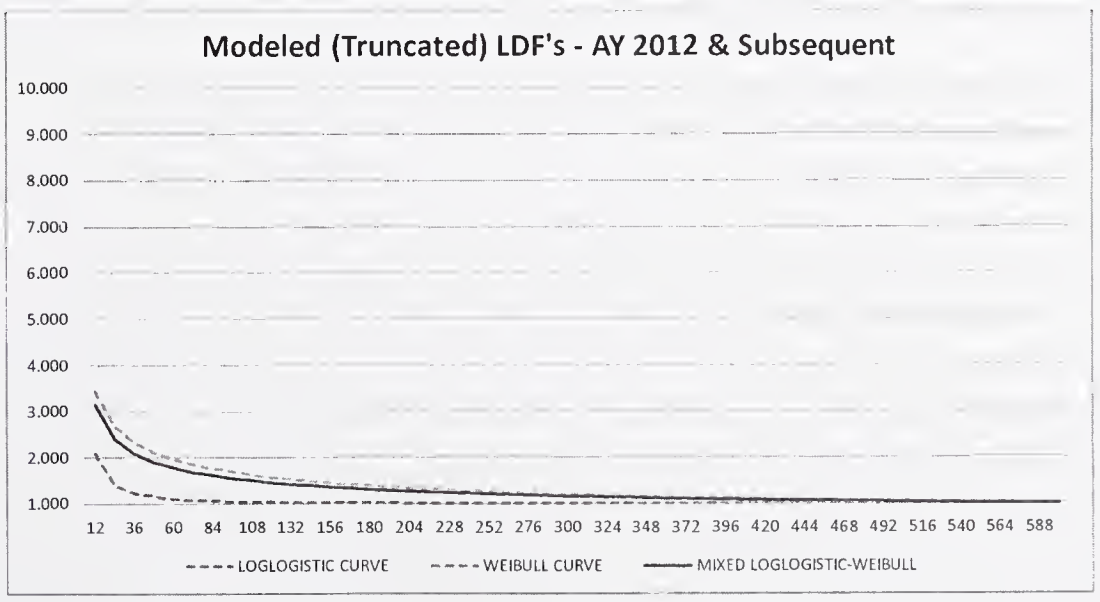
*ACCIDENT YEARS 2012 & SUBSEQUENT**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	2.095	2.087	5.750	3.432	4.613	3.145
24	1.408	1.403	4.497	2.684	3.536	2.411
36	1.229	1.224	3.910	2.334	3.076	2.097
48	1.152	1.148	3.548	2.118	2.803	1.911
60	1.111	1.106	3.295	1.966	2.615	1.783
72	1.086	1.081	3.104	1.853	2.476	1.688
84	1.069	1.064	2.954	1.763	2.367	1.614
96	1.057	1.053	2.831	1.690	2.279	1.554
108	1.048	1.044	2.728	1.628	2.205	1.504
120	1.041	1.037	2.640	1.576	2.142	1.461
132	1.036	1.032	2.564	1.530	2.088	1.424
144	1.032	1.028	2.497	1.490	2.041	1.391
156	1.028	1.024	2.437	1.454	1.998	1.363
168	1.026	1.021	2.383	1.422	1.961	1.337
180	1.023	1.019	2.335	1.393	1.927	1.314
192	1.021	1.017	2.291	1.367	1.896	1.293
204	1.019	1.015	2.251	1.343	1.867	1.273
216	1.018	1.014	2.214	1.321	1.841	1.256
228	1.017	1.012	2.179	1.301	1.817	1.239
240	1.015	1.011	2.148	1.282	1.795	1.224
252	1.014	1.010	2.118	1.264	1.775	1.210
264	1.013	1.009	2.090	1.248	1.755	1.197
276	1.013	1.009	2.065	1.232	1.737	1.184
288	1.012	1.008	2.040	1.218	1.720	1.173
300	1.011	1.007	2.017	1.204	1.704	1.162
312	1.011	1.007	1.996	1.191	1.689	1.152
324	1.010	1.006	1.975	1.179	1.675	1.142
336	1.010	1.005	1.956	1.167	1.661	1.133
348	1.009	1.005	1.937	1.156	1.648	1.124
360	1.009	1.005	1.920	1.146	1.636	1.116
372	1.008	1.004	1.903	1.136	1.624	1.108
384	1.008	1.004	1.887	1.126	1.613	1.100
396	1.008	1.003	1.871	1.117	1.603	1.093
408	1.007	1.003	1.857	1.108	1.592	1.086
420	1.007	1.003	1.843	1.100	1.583	1.079
432	1.007	1.003	1.829	1.092	1.573	1.073
444	1.006	1.002	1.816	1.084	1.564	1.067
456	1.006	1.002	1.804	1.077	1.556	1.061
468	1.006	1.002	1.792	1.069	1.547	1.055
480	1.006	1.002	1.780	1.062	1.539	1.049
492	1.006	1.001	1.769	1.056	1.531	1.044
504	1.005	1.001	1.758	1.049	1.524	1.039
516	1.005	1.001	1.748	1.043	1.517	1.034
528	1.005	1.001	1.738	1.037	1.510	1.029
540	1.005	1.001	1.728	1.031	1.503	1.025
552	1.005	1.001	1.719	1.026	1.496	1.020
564	1.005	1.000	1.710	1.020	1.490	1.016
576	1.004	1.000	1.701	1.015	1.484	1.012
588	1.004	1.000	1.692	1.010	1.478	1.008
600	1.004	1.000	1.684	1.005	1.472	1.004

Assumptions:

Loglogistic	
Scale	12.8
Shape	1.42
Weibull	
Scale	780.0
Shape	0.40
Weight to Loglogistic	0.311
Weight to Weibull	0.689
LDF Truncated at Age	612

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 612; (4) = (3) / (3) at age 612.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

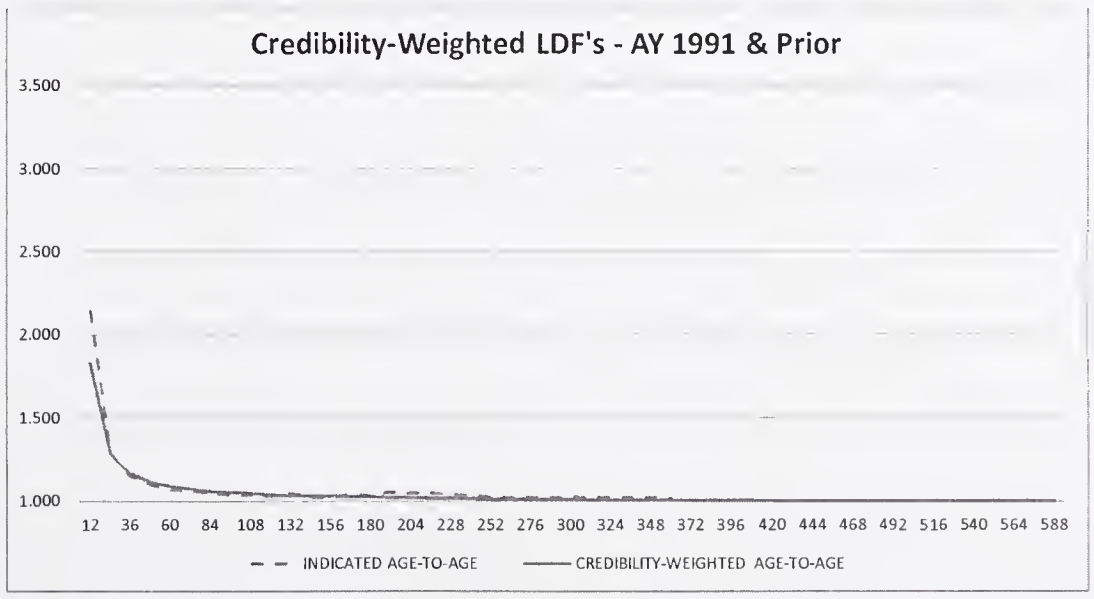
*ACCIDENT YEARS 1991 & PRIOR**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	2.142	0.490	1.523	1.826	1.826	6.515
24 - 36	1.288	0.510	1.275	1.282	1.282	3.568
36 - 48	1.150	0.529	1.187	1.167	1.167	2.783
48 - 60	1.100	0.548	1.141	1.118	1.118	2.385
60 - 72	1.071	0.566	1.113	1.089	1.089	2.132
72 - 84	1.059	0.583	1.094	1.074	1.074	1.957
84 - 96	1.047	0.600	1.081	1.061	1.061	1.823
96 - 108	1.040	0.616	1.070	1.052	1.052	1.719
108 - 120	1.038	0.632	1.062	1.047	1.047	1.634
120 - 132	1.032	0.648	1.056	1.041	1.041	1.561
132 - 144	1.049	0.663	1.051	1.049	1.035	1.500
144 - 156	1.025	0.529	1.046	1.035	1.035	1.449
156 - 168	1.022	0.529	1.043	1.031	1.031	1.400
168 - 180	1.045	0.510	1.039	1.042	1.028	1.357
180 - 192	1.035	0.510	1.037	1.036	1.026	1.320
192 - 204	1.054	0.529	1.034	1.045	1.023	1.287
204 - 216	1.049	0.529	1.032	1.041	1.021	1.258
216 - 228	1.046	0.548	1.030	1.039	1.019	1.232
228 - 240	1.039	0.566	1.029	1.034	1.018	1.208
240 - 252	1.037	0.583	1.027	1.033	1.016	1.187
252 - 264	1.028	0.600	1.026	1.027	1.015	1.168
264 - 276	1.023	0.616	1.024	1.024	1.014	1.151
276 - 288	1.023	0.616	1.023	1.023	1.012	1.136
288 - 300	1.022	0.632	1.022	1.022	1.011	1.122
300 - 312	1.026	0.632	1.021	1.025	1.010	1.110
312 - 324	1.024	0.632	1.020	1.023	1.010	1.098
324 - 336	1.022	0.632	1.020	1.021	1.009	1.088
336 - 348	1.022	0.632	1.019	1.021	1.008	1.078
348 - 360	1.025	0.632	1.018	1.023	1.007	1.070
360 - 372	1.015	0.632	1.018	1.016	1.007	1.062
372 - 384		0.000	1.017	1.017	1.006	1.055
384 - 396		0.000	1.016	1.016	1.005	1.049
396 - 408		0.000	1.016	1.016	1.005	1.043
408 - 420		0.000	1.015	1.015	1.004	1.038
420 - 432		0.000	1.015	1.015	1.004	1.033
432 - 444		0.000	1.014	1.014	1.004	1.029
444 - 456		0.000	1.014	1.014	1.003	1.025
456 - 468		0.000	1.014	1.014	1.003	1.022
468 - 480		0.000	1.013	1.013	1.002	1.020
480 - 492		0.000	1.013	1.013	1.002	1.017
492 - 504		0.000	1.012	1.012	1.002	1.015
504 - 516		0.000	1.012	1.012	1.001	1.014
516 - 528		0.000	1.012	1.012	1.001	1.012
528 - 540		0.000	1.012	1.012	1.001	1.011
540 - 552		0.000	1.011	1.011	1.000	1.011
552 - 564		0.000	1.011	1.011	1.000	1.010
564 - 576		0.000	1.011	1.011	1.000	1.010
576 - 588		0.000	1.010	1.010	1.000	1.010
588 - 600		0.000	1.010	1.010	1.000	1.010
600 - ULT						1.010

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit III, Page 4.
(2) = min{√ [# of AY's used in (1) / 50] ,1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit III, Page 2A, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit III, Page 2A, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

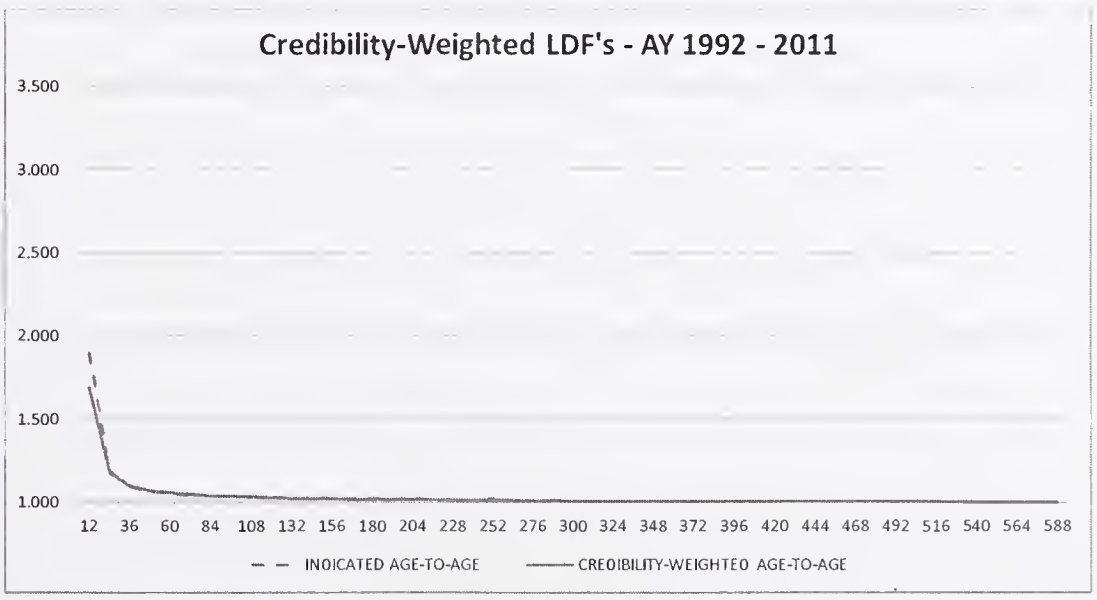
*ACCIDENT YEARS 1992- 2011**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	1.900	0.632	1.318	1.686	1.686	4.306
24 - 36	1.188	0.632	1.160	1.178	1.178	2.554
36 - 48	1.098	0.632	1.105	1.101	1.101	2.168
48 - 60	1.066	0.616	1.078	1.070	1.070	1.970
60 - 72	1.053	0.600	1.061	1.056	1.056	1.841
72 - 84	1.044	0.583	1.050	1.046	1.046	1.742
84 - 96	1.037	0.566	1.042	1.039	1.039	1.665
96 - 108	1.036	0.548	1.036	1.036	1.036	1.603
108 - 120	1.031	0.529	1.032	1.031	1.031	1.547
120 - 132	1.032	0.510	1.028	1.030	1.030	1.500
132 - 144	1.025	0.490	1.025	1.025	1.025	1.457
144 - 156	1.030	0.469	1.023	1.026	1.023	1.421
156 - 168	1.023	0.447	1.021	1.022	1.022	1.390
168 - 180	1.022	0.424	1.019	1.020	1.020	1.360
180 - 192	1.022	0.400	1.017	1.019	1.019	1.334
192 - 204	1.020	0.374	1.016	1.017	1.017	1.309
204 - 216	1.020	0.346	1.015	1.017	1.017	1.286
216 - 228	1.019	0.316	1.014	1.015	1.015	1.265
228 - 240	1.016	0.283	1.013	1.014	1.014	1.246
240 - 252	1.012	0.245	1.012	1.012	1.012	1.229
252 - 264	1.023	0.200	1.012	1.014	1.011	1.214
264 - 276	1.010	0.141	1.011	1.011	1.011	1.200
276 - 288		0.000	1.010	1.010	1.010	1.188
288 - 300		0.000	1.010	1.010	1.010	1.175
300 - 312		0.000	1.009	1.009	1.009	1.164
312 - 324		0.000	1.009	1.009	1.009	1.153
324 - 336		0.000	1.008	1.008	1.008	1.143
336 - 348		0.000	1.008	1.008	1.008	1.134
348 - 360		0.000	1.008	1.008	1.008	1.125
360 - 372		0.000	1.007	1.007	1.007	1.116
372 - 384		0.000	1.007	1.007	1.007	1.108
384 - 396		0.000	1.007	1.007	1.007	1.100
396 - 408		0.000	1.007	1.007	1.007	1.093
408 - 420		0.000	1.006	1.006	1.006	1.086
420 - 432		0.000	1.006	1.006	1.006	1.079
432 - 444		0.000	1.006	1.006	1.006	1.073
444 - 456		0.000	1.006	1.006	1.006	1.066
456 - 468		0.000	1.005	1.005	1.005	1.060
468 - 480		0.000	1.005	1.005	1.005	1.055
480 - 492		0.000	1.005	1.005	1.005	1.049
492 - 504		0.000	1.005	1.005	1.005	1.044
504 - 516		0.000	1.005	1.005	1.005	1.039
516 - 528		0.000	1.005	1.005	1.005	1.034
528 - 540		0.000	1.004	1.004	1.004	1.029
540 - 552		0.000	1.004	1.004	1.004	1.025
552 - 564		0.000	1.004	1.004	1.004	1.020
564 - 576		0.000	1.004	1.004	1.004	1.016
576 - 588		0.000	1.004	1.004	1.004	1.012
588 - 600		0.000	1.004	1.004	1.004	1.008
600 - ULT						1.004

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit III, Page 4.
(2) = min {√ [# of AY's used in (1) / 50] ,1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit III, Page 2B, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit III, Page 2B, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

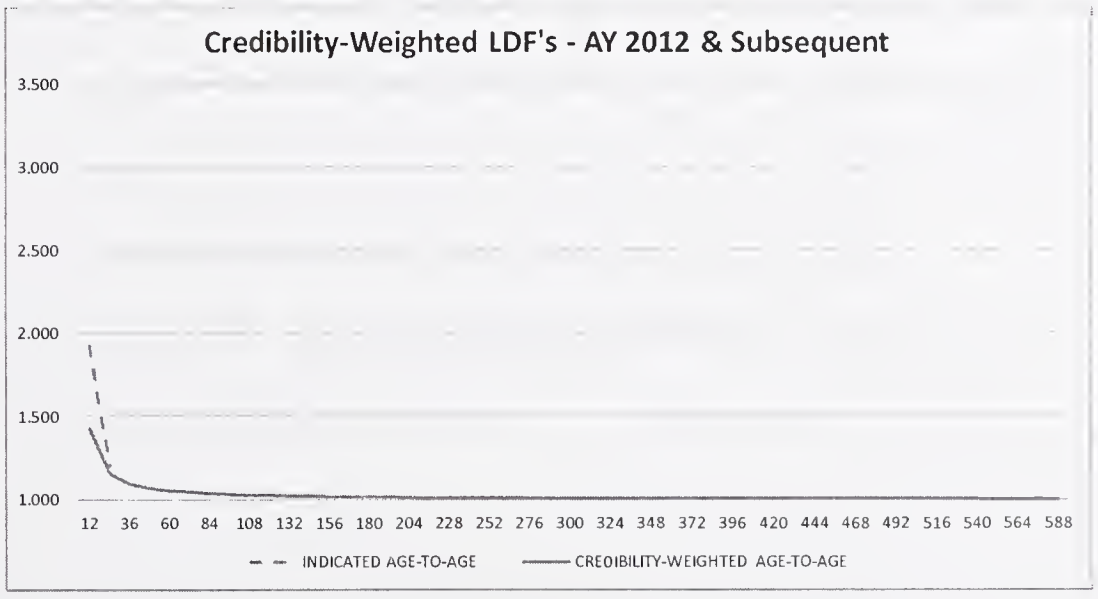
*ACCIDENT YEARS 2012 & SUBSEQUENT**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	1.932	0.200	1.304	1.430	1.430	3.470
24 - 36	1.202	0.141	1.150	1.157	1.157	2.426
36 - 48		0.000	1.098	1.098	1.098	2.097
48 - 60		0.000	1.072	1.072	1.072	1.911
60 - 72		0.000	1.056	1.056	1.056	1.783
72 - 84		0.000	1.046	1.046	1.046	1.688
84 - 96		0.000	1.039	1.039	1.039	1.614
96 - 108		0.000	1.033	1.033	1.033	1.554
108 - 120		0.000	1.029	1.029	1.029	1.504
120 - 132		0.000	1.026	1.026	1.026	1.461
132 - 144		0.000	1.023	1.023	1.023	1.424
144 - 156		0.000	1.021	1.021	1.021	1.391
156 - 168		0.000	1.019	1.019	1.019	1.363
168 - 180		0.000	1.018	1.018	1.018	1.337
180 - 192		0.000	1.016	1.016	1.016	1.314
192 - 204		0.000	1.015	1.015	1.015	1.293
204 - 216		0.000	1.014	1.014	1.014	1.273
216 - 228		0.000	1.013	1.013	1.013	1.256
228 - 240		0.000	1.012	1.012	1.012	1.239
240 - 252		0.000	1.012	1.012	1.012	1.224
252 - 264		0.000	1.011	1.011	1.011	1.210
264 - 276		0.000	1.010	1.010	1.010	1.197
276 - 288		0.000	1.010	1.010	1.010	1.184
288 - 300		0.000	1.009	1.009	1.009	1.173
300 - 312		0.000	1.009	1.009	1.009	1.162
312 - 324		0.000	1.009	1.009	1.009	1.152
324 - 336		0.000	1.008	1.008	1.008	1.142
336 - 348		0.000	1.008	1.008	1.008	1.133
348 - 360		0.000	1.007	1.007	1.007	1.124
360 - 372		0.000	1.007	1.007	1.007	1.116
372 - 384		0.000	1.007	1.007	1.007	1.108
384 - 396		0.000	1.007	1.007	1.007	1.100
396 - 408		0.000	1.006	1.006	1.006	1.093
408 - 420		0.000	1.006	1.006	1.006	1.086
420 - 432		0.000	1.006	1.006	1.006	1.079
432 - 444		0.000	1.006	1.006	1.006	1.073
444 - 456		0.000	1.006	1.006	1.006	1.067
456 - 468		0.000	1.005	1.005	1.005	1.061
468 - 480		0.000	1.005	1.005	1.005	1.055
480 - 492		0.000	1.005	1.005	1.005	1.049
492 - 504		0.000	1.005	1.005	1.005	1.044
504 - 516		0.000	1.005	1.005	1.005	1.039
516 - 528		0.000	1.005	1.005	1.005	1.034
528 - 540		0.000	1.004	1.004	1.004	1.029
540 - 552		0.000	1.004	1.004	1.004	1.025
552 - 564		0.000	1.004	1.004	1.004	1.020
564 - 576		0.000	1.004	1.004	1.004	1.016
576 - 588		0.000	1.004	1.004	1.004	1.012
588 - 600		0.000	1.004	1.004	1.004	1.008
600 - ULT						1.004

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit III, Page 4.
(2) = min{√ [# of AY's used in (1) / 50] ,1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit III, Page 2C, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit III, Page 2C, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND
LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
AS OF JUNE 30, 2014
CALCULATION OF THE LOSS DEVELOPMENT FACTORS
WORKERS' COMPENSATION - MEDICAL BENEFITS
($AMTS IN THOUSANDS)

UNLIMITED LOSSES

PAID LOSS DEVELOPMENT

Accident Years	DEVELOPMENT MONTHS 12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1964																
1965																
1966																
1967																
1968																
1969												1,094				
1970											1,251	1,251				
1971										1,338	1,342	1,346				
1972									1,400	1,400	1,400	1,402				
1973								1,438	1,440	1,440	1,443	1,451				
1974							2,566	2,648	2,743	2,831	2,938	3,011				
1975						2,395	2,483	2,599	2,700	2,933	3,010	3,062				
1976					2,292	2,399	2,477	2,575	2,760	2,872	2,986	3,091				3,561
1977				2,753	2,949	3,127	3,218	3,427	3,595	3,714	3,785	6,241			6,517	
1978			3,212	3,479	3,631	3,793	3,951	4,140	4,282	4,431	5,655	9,564	10,347	10,015		
1979		3,221	3,755	4,124	4,401	4,643	4,815	5,046	5,265	6,711	6,922	7,053	7,227	7,309	7,495	7,808
1980	2,532	4,214	4,935	5,467	5,923	6,319	6,777	7,258	8,975	9,269	9,459	9,734	9,885	10,104	10,418	10,626
1981	2,668	4,775	5,663	6,352	7,130	7,722	8,200	10,301	10,757	11,258	11,693	12,064	12,448	12,713	13,023	13,299
1982	2,904	5,172	6,072	6,937	7,740	8,392	10,591	11,085	11,449	11,863	12,250	12,528	12,765	13,012	13,271	13,553
1983	3,288	6,306	7,732	9,023	10,050	12,924	13,767	14,496	14,992	15,427	15,752	16,037	16,356	16,787	17,231	17,693
1984	3,997	7,889	10,642	12,664	16,349	17,344	18,152	18,971	19,409	20,028	20,390	20,706	21,234	21,644	22,178	22,860
1985	3,924	9,670	13,347	17,964	19,546	20,649	21,422	22,006	22,615	23,170	23,684	24,260	24,711	25,053	25,438	25,909
1986	4,528	11,157	18,208	20,327	21,864	23,022	24,224	25,074	25,743	26,498	27,335	27,921	28,506	29,098	29,822	30,443
1987	5,437	15,751	19,680	21,938	23,465	24,595	25,668	26,445	27,149	27,986	28,591	29,213	29,908	30,605	31,290	31,956
1988	8,825	17,899	21,813	24,307	26,161	27,443	28,338	29,135	30,252	30,985	31,691	32,352	33,121	34,038	34,883	35,907
1989	9,704	18,465	22,359	24,911	26,364	27,320	28,042	28,740	29,289	29,802	30,310	31,000	31,493	32,104	32,820	33,457
1990	10,136	20,455	24,794	27,639	29,316	30,488	31,832	32,621	33,396	34,131	35,077	36,821	37,689	38,870	39,762	40,684
1991	9,970	20,495	25,138	27,573	29,732	31,222	32,264	33,465	34,607	35,774	36,719	37,724	38,975	40,094	41,305	42,456
1992	12,237	24,814	28,866	31,209	32,741	33,791	34,881	35,818	36,780	37,762	38,639	39,485	40,414	41,332	41,939	42,561
1993	11,499	22,931	27,053	29,596	31,127	32,644	33,900	35,016	36,034	37,098	38,164	39,428	40,722	42,094	43,259	44,121
1994	12,174	23,208	27,061	28,847	30,503	31,756	32,983	34,101	35,077	35,950	37,419	38,411	39,480	40,394	41,564	42,295
1995	11,625	20,585	23,700	25,856	27,200	28,404	29,431	30,481	31,521	32,594	33,593	34,582	35,257	35,959	36,678	37,633
1996	10,253	17,646	20,874	22,597	23,798	24,995	26,017	27,075	27,875	28,652	29,607	30,387	32,738	33,207	33,692	34,218
1997	8,155	16,219	18,962	20,675	22,061	23,503	24,414	25,473	26,611	27,905	28,472	28,989	30,001	30,799	31,276	31,899
1998	8,718	15,458	18,349	20,380	21,939	23,387	24,660	25,803	26,798	27,655	28,549	29,538	30,452	31,357	32,093	33,348
1999	9,073	16,982	20,368	23,173	24,915	26,839	28,242	30,210	31,508	32,724	33,659	34,592	35,454	36,411	37,456	38,399
2000	8,719	16,436	19,608	22,058	24,032	25,566	27,069	28,435	29,783	30,636	32,926	33,622	34,349	34,905	35,530	
2001	9,389	19,623	25,319	29,137	31,741	33,851	35,728	37,441	39,379	40,747	42,231	43,146	44,295	45,142		
2002	11,134	22,844	29,283	32,230	34,099	35,618	37,337	38,818	40,370	41,467	42,739	43,674	44,559			
2003	13,976	28,680	34,720	38,648	41,663	44,118	46,655	48,377	50,309	52,163	53,812	54,959				
2004	15,883	31,393	37,678	41,068	43,627	45,288	47,340	48,702	50,448	51,447	52,301					
2005	17,919	35,050	41,051	45,075	48,117	51,495	53,380	54,657	56,810	58,458						
2006	20,507	39,809	46,292	50,687	54,339	57,636	60,618	62,714	63,875							
2007	23,542	42,290	49,526	54,653	57,780	60,305	62,196	63,899								
2008	21,837	41,965	50,312	54,763	59,541	63,210	65,888									
2009	20,597	36,595	43,146	47,108	49,819	51,781										
2010	18,409	34,353	40,885	45,169	47,347											
2011	20,339	36,588	42,782	46,017												
2012	17,903	36,869	44,312													
2013	18,700	33,833														
2014	20,122															

LOSS DEVELOPMENT FACTORS

Accident Years	12 TO 24	24 TO 36	36 TO 48	48 TO 60	60 TO 72	72 TO 84	84 TO 96	96 TO 108	108 TO 120	120 TO 132	132 TO 144	144 TO 156	156 TO 168	168 TO 180	180 TO 192	192 TO 204
1964																
1965																
1966																
1967																
1968																
1969																
1970											1.000					
1971										1.003	1.003					
1972									1.000	1.000	1.001					
1973								1.001	1.000	1.002	1.006					
1974							1.032	1.036	1.032	1.038	1.025					
1975						1.037	1.047	1.039	1.086	1.026	1.017					
1976					1.047	1.033	1.040	1.072	1.041	1.040	1.035					
1977				1.071	1.060	1.029	1.065	1.049	1.033	1.019	1.649					
1978			1.083	1.044	1.045	1.042	1.048	1.034	1.035	1.276	1.691	1.082	0.968			
1979		1.166	1.098	1.067	1.055	1.037	1.048	1.043	1.275	1.031	1.019	1.025	1.011	1.025	1.042	1.029
1980	1.664	1.171	1.108	1.083	1.067	1.072	1.071	1.237	1.033	1.020	1.029	1.016	1.022	1.031	1.020	1.015
1981	1.790	1.186	1.122	1.122	1.083	1.062	1.256	1.044	1.047	1.039	1.032	1.032	1.021	1.024	1.021	1.020
1982	1.781	1.174	1.142	1.116	1.084	1.262	1.047	1.033	1.036	1.033	1.023	1.019	1.019	1.020	1.021	1.017
1983	1.918	1.226	1.167	1.114	1.286	1.065	1.053	1.034	1.029	1.021	1.018	1.020	1.026	1.026	1.027	1.023
1984	1.974	1.349	1.190	1.291	1.061	1.047	1.045	1.023	1.032	1.018	1.015	1.025	1.019	1.025	1.031	1.018
1985	2.464	1.380	1.346	1.088	1.056	1.037	1.027	1.028	1.025	1.022	1.024	1.019	1.014	1.015	1.019	1.018
1986	2.464	1.632	1.116	1.076	1.053	1.052	1.035	1.027	1.029	1.032	1.021	1.021	1.021	1.025	1.021	1.020
1987	2.897	1.249	1.115	1.070	1.048	1.044	1.030	1.027	1.031	1.022	1.022	1.024	1.023	1.022	1.021	1.027
1988	2.028	1.219	1.114	1.076	1.049	1.033	1.028	1.038	1.024	1.023	1.021	1.024	1.028	1.025	1.029	1.026
1989	1.903	1.211	1.114	1.058	1.036	1.026	1.025	1.019	1.018	1.017	1.023	1.016	1.019	1.022	1.019	1.023
1990	2.018	1.212	1.115	1.061	1.040	1.044	1.025	1.024	1.022	1.028	1.050	1.024	1.031	1.023	1.023	1.026
1991	2.056	1.227	1.097	1.078	1.050	1.033	1.037	1.034	1.034	1.026	1.027	1.033	1.029	1.030	1.028	1.022
1992	2.028	1.163	1.081	1.049	1.032	1.032	1.027	1.027	1.027	1.023	1.022	1.024	1.023	1.015	1.015	1.018
1993	1.994	1.180	1.094	1.052	1.049	1.038	1.033	1.029	1.030	1.029	1.033	1.033	1.034	1.028	1.020	1.024
1994	1.906	1.166	1.066	1.057	1.041	1.039	1.034	1.029	1.025	1.041	1.027	1.028	1.023	1.029	1.018	1.019
1995	1.771	1.151	1.091	1.052	1.044	1.036	1.036	1.034	1.034	1.031	1.029	1.020	1.020	1.020	1.026	1.016
1996	1.721	1.183	1.083	1.053	1.050	1.041	1.041	1.030	1.028	1.033	1.026	1.077	1.014	1.015	1.016	1.013
1997	1.989	1.169	1.090	1.067	1.065	1.039	1.043	1.045	1.049	1.020	1.018	1.035	1.027	1.015	1.020	1.023
1998	1.773	1.187	1.111	1.076	1.066	1.054	1.046	1.039	1.032	1.032	1.035	1.031	1.030	1.023	1.039	1.024
1999	1.872	1.199	1.138	1.075	1.077	1.052	1.070	1.043	1.039	1.029	1.028	1.025	1.027	1.029	1.025	
2000	1.885	1.193	1.125	1.089	1.064	1.059	1.050	1.047	1.029	1.075	1.021	1.022	1.016	1.018		
2001	2.090	1.290	1.151	1.089	1.066	1.055	1.048	1.052	1.035	1.036	1.022	1.027	1.019			
2002	2.090	1.282	1.101	1.058	1.045	1.048	1.040	1.040	1.027	1.031	1.022	1.020				
2003	2.052	1.211	1.113	1.078	1.059	1.058	1.037	1.040	1.037	1.032	1.021					
2004	2.052	1.200	1.090	1.062	1.038	1.045	1.029	1.036	1.020	1.017						
2005	1.977	1.171	1.098	1.067	1.070	1.037	1.024	1.039	1.029							
2006	1.956	1.163	1.095	1.072	1.061	1.052	1.035	1.019								
2007	1.941	1.171	1.104	1.057	1.044	1.031	1.027									
2008	1.796	1.199	1.088	1.087	1.062	1.042										
2009	1.796	1.179	1.092	1.058	1.039											
2010	1.922	1.190	1.105	1.048												
2011	1.777	1.169	1.076													
2012	1.866	1.202														
2013	1.799															
AVERAGE	1.971	1.218	1.115	1.078	1.062	1.050	1.046	1.041	1.038	1.034	1.060	1.029	1.020	1.023	1.024	1.021
3 YR AVG.	1.814	1.187	1.091	1.064	1.048	1.042	1.029	1.031	1.029	1.027	1.022	1.023	1.021	1.023	1.028	1.020
EXCL HI LO	1.952	1.207	1.110	1.073	1.055	1.045	1.041	1.036	1.032	1.028	1.043	1.027	1.022	1.023	1.023	1.021
SELECTED 90/91 & PRIOR	**2.142**	**1.288**	**1.150**	**1.100**	**1.071**	**1.059**	**1.047**	**1.040**	**1.038**	**1.032**	**1.049**	**1.025**	**1.022**	**1.045**	**1.035**	**1.054**
SELECTED 91/92-10/11	**1.900**	**1.188**	**1.098**	**1.066**	**1.053**	**1.044**	**1.037**	**1.036**	**1.031**	**1.032**	**1.025**	**1.030**	**1.023**	**1.022**	**1.022**	**1.020**
SELECTED 11/12-SUB	**1.932**	**1.202**														

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW

AS OF JUNE 30, 2014
CALCULATION OF THE LOSS DEVELOPMENT FACTORS
WORKERS' COMPENSATION - MEDICAL BENEFITS
(SAMTS IN THOUSANDS)

UNLIMITED LOSSES

PAID LOSS DEVELOPMENT

Accident Years	DEVELOPMENT MONTHS 204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384
1964																
1965														939	939	
1966													1,135	1,137	1,149	
1967												1,231	1,231	1,231	1,231	
1968											1,348	1,349	1,348	1,350	1,350	
1969										1,405	1,406	1,406	1,407	1,407	1,407	
1970						1,269			1,581	1,582	1,589	1,591	1,592	1,596	1,604	
1971					1,418			1,826	1,828	1,844	1,855	1,856	1,874	1,897	1,937	
1972				1,418			1,873	1,873	1,877	1,878	1,880	1,880	1,884	1,884	1,884	
1973			1,516			1,984	1,986	1,986	1,986	1,991	1,992	1,997	1,997	1,997	2,006	
1974		3,419			4,181	4,341	4,420	4,537	4,593	4,687	4,694	4,792	4,907	5,009	5,046	
1975	3,475			4,297	4,342	4,407	4,454	4,509	4,561	4,522	4,579	4,686	4,722	4,804	4,841	
1976	3,753		4,498	4,572	4,681	4,750	4,850	4,935	4,949	5,054	5,187	5,361	5,424	5,537	5,593	
1977		5,362	5,437	5,528	5,676	5,920	6,072	6,128	6,493	6,841	7,107	7,539	8,102	9,354	10,017	
1978	6,990	7,072	7,205	7,305	7,342	7,426	7,544	7,603	7,741	7,938	8,007	8,067	8,109	8,158	8,205	
1979	8,032	8,421	8,537	8,646	8,766	8,889	9,011	9,079	9,447	9,620	9,826	9,942	10,030	10,123	10,250	
1980	10,785	10,925	11,334	11,612	11,831	12,004	12,229	12,551	12,827	13,002	13,327	13,451	13,528	13,623	13,738	
1981	13,566	13,756	13,993	14,250	14,568	14,896	15,142	15,478	15,819	16,270	16,780	17,001	17,210	17,476	17,591	
1982	13,779	14,018	15,113	15,407	15,797	16,194	16,369	16,709	16,952	17,300	17,860	18,181	18,583	19,073	19,336	
1983	18,102	18,677	19,274	19,812	20,334	20,653	20,980	21,493	21,854	22,259	22,625	23,125	23,451	23,754	24,039	
1984	23,265	23,851	24,367	24,862	25,422	26,151	26,905	27,327	27,926	28,862	29,513	30,248	31,052	31,779	32,434	
1985	26,386	26,846	27,516	28,190	28,618	28,945	29,347	29,869	30,385	30,793	31,127	31,574	31,933	32,153		
1986	31,048	31,638	32,413	33,043	33,588	34,144	34,726	35,862	36,350	36,827	37,566	38,115	38,732			
1987	32,809	33,663	34,309	35,355	36,131	36,932	37,943	38,733	39,521	40,585	41,576	42,220				
1988	36,824	37,714	38,677	39,545	40,385	41,234	42,048	42,669	43,339	45,033	45,616					
1989	34,223	34,958	35,591	36,385	37,006	37,566	38,243	38,690	39,164	39,619						
1990	41,725	42,897	45,140	46,362	47,391	48,503	49,450	50,647	51,593							
1991	43,398	44,487	45,774	46,827	48,469	49,216	49,895	50,531								
1992	43,331	44,187	45,152	45,873	46,536	47,190	47,672									
1993	45,175	46,312	47,310	48,390	48,817	50,353										
1994	43,105	43,900	44,500	44,998	45,551											
1995	38,234	38,797	39,672	40,222												
1996	34,678	35,541	36,033													
1997	32,634	33,210														
1998	34,146															
1999																
2000																
2001																
2002																
2003																
2004																
2005																
2006																
2007																
2008																
2009																
2010																
2011																
2012																
2013																
2014																

LOSS DEVELOPMENT FACTORS

Accident Years	192 TO 204	204 TO 216	216 TO 228	228 TO 240	240 TO 252	252 TO 264	264 TO 276	276 TO 288	288 TO 300	300 TO 312	312 TO 324	324 TO 336	336 TO 348	348 TO 360	360 TO 372	372 TO 384
1964																
1965														1.000		
1966													1.002	1.011		
1967												1.000	1.000	1.000		
1968											1.001	0.999	1.001	1.000		
1969										1.001	1.000	1.001	1.000	1.000		
1970									1.001	1.004	1.001	1.001	1.003	1.005		
1971								1.001	1.009	1.006	1.001	1.010	1.012	1.021		
1972							1.000	1.002	1.001	1.001	1.000	1.002	1.000	1.000		
1973						1.001	1.000	1.000	1.003	1.001	1.003	1.000	1.000	1.005		
1974					1.038	1.018	1.026	1.012	1.020	1.001	1.021	1.024	1.021	1.007		
1975				1.010	1.015	1.011	1.012	1.012	0.991	1.013	1.023	1.008	1.017	1.008		
1976			1.016	1.024	1.015	1.021	1.018	1.003	1.021	1.026	1.034	1.012	1.021	1.010		
1977		1.014	1.017	1.027	1.043	1.026	1.009	1.060	1.054	1.039	1.061	1.075	1.155	1.071		
1978	1.012	1.019	1.014	1.005	1.011	1.016	1.008	1.018	1.025	1.009	1.007	1.005	1.006	1.006		
1979	1.048	1.014	1.013	1.014	1.014	1.014	1.008	1.041	1.018	1.021	1.012	1.009	1.009	1.013		
1980	1.013	1.037	1.025	1.019	1.015	1.019	1.026	1.022	1.014	1.025	1.009	1.006	1.007	1.008		
1981	1.014	1.017	1.018	1.022	1.023	1.017	1.022	1.022	1.029	1.031	1.013	1.012	1.015	1.007		
1982	1.017	1.078	1.019	1.025	1.025	1.011	1.021	1.015	1.021	1.032	1.018	1.022	1.026	1.014		
1983	1.032	1.032	1.028	1.026	1.016	1.016	1.024	1.017	1.019	1.016	1.022	1.014	1.013	1.012		
1984	1.025	1.022	1.020	1.023	1.029	1.029	1.016	1.022	1.034	1.023	1.025	1.027	1.023	1.021		
1985	1.017	1.025	1.024	1.015	1.011	1.014	1.018	1.017	1.013	1.011	1.014	1.011	1.007			
1986	1.019	1.024	1.019	1.016	1.017	1.017	1.033	1.014	1.013	1.020	1.015	1.016				
1987	1.026	1.019	1.030	1.022	1.022	1.027	1.021	1.020	1.027	1.024	1.015					
1988	1.024	1.026	1.022	1.021	1.021	1.020	1.015	1.016	1.039	1.013						
1989	1.021	1.018	1.022	1.017	1.015	1.018	1.012	1.012	1.012							
1990	1.028	1.052	1.027	1.022	1.023	1.020	1.024	1.019								
1991	1.025	1.029	1.023	1.035	1.015	1.014	1.013									
1992	1.020	1.022	1.016	1.014	1.014	1.010										
1993	1.025	1.022	1.023	1.009	1.031											
1994	1.018	1.014	1.011	1.012												
1995	1.015	1.023	1.014													
1996	1.025	1.014														
1997	1.018															
1998																
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2007																
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2009																
2010																
2011																
2012																
2013																
AVERAGE	1.022	1.026	1.020	1.019	1.021	1.017	1.016	1.017	1.018	1.016	1.015	1.013	1.017	1.011		
3 YR AVG.	1.019	1.017	1.016	1.012	1.020	1.015	1.016	1.016	1.026	1.019	1.015	1.018	1.014	1.016		
EXCL HI LO	1.021	1.024	1.020	1.019	1.020	1.017	1.016	1.016	1.018	1.015	1.013	1.010	1.010	1.008		
SELECTED 90/91 & PRIOR	1.054	1.049	1.046	1.039	1.037	1.028	1.023	1.023	1.022	1.026	1.024	1.022	1.022	1.025		
SELECTED 91/92-10/11	1.020	1.020	1.019	1.016	1.012	1.023	1.010									
SELECTED 11/12-SUB																

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
COMPARISON OF LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

	ACCIDENT YEARS 1987 & PRIOR*			ACCIDENT YEARS 1988 - 1991*			ACCIDENT YEARS 1992 - 1995*			ACCIDENT YEARS 1996 & SUBSEQUENT*		
DEVELOPMENT MONTH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH	TOWERS WATSON CUMULATIVE LOW	AMI CREDIBILITY WEIGHTED CUMULATIVE	TOWERS WATSON CUMULATIVE HIGH
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
12	8.478	9.598	17.548	7.388	5.783	13.740	5.630	4.425	9.001	4.754	5.334	9.004
24	3.138	3.346	5.384	2.678	2.324	4.187	2.131	2.035	2.924	1.962	2.296	3.132
36	1.998	2.158	2.986	1.735	1.652	2.435	1.513	1.579	1.972	1.447	1.723	2.103
48	1.548	1.724	2.180	1.398	1.408	1.796	1.331	1.406	1.661	1.284	1.506	1.728
60	1.337	1.508	1.802	1.272	1.294	1.547	1.246	1.313	1.493	1.204	1.397	1.541
72	1.223	1.375	1.597	1.211	1.227	1.427	1.197	1.250	1.391	1.160	1.325	1.417
84	1.162	1.289	1.462	1.176	1.185	1.353	1.164	1.207	1.323	1.133	1.280	1.341
96	1.138	1.242	1.361	1.137	1.154	1.295	1.136	1.173	1.282	1.112	1.245	1.284
108	1.122	1.200	1.297	1.114	1.132	1.250	1.111	1.146	1.247	1.095	1.218	1.242
120	1.111	1.164	1.256	1.095	1.114	1.216	1.092	1.124	1.217	1.081	1.195	1.211
132	1.101	1.135	1.226	1.082	1.100	1.197	1.080	1.107	1.196	1.071	1.177	1.189
144	1.092	1.110	1.202	1.072	1.089	1.178	1.069	1.092	1.175	1.063	1.162	1.170
156	1.084	1.095	1.183	1.064	1.079	1.162	1.061	1.080	1.160	1.056	1.148	1.153
168	1.074	1.084	1.168	1.055	1.071	1.148	1.053	1.070	1.145	1.050	1.135	1.139
180	1.063	1.075	1.154	1.048	1.063	1.134	1.047	1.061	1.133	1.044	1.125	1.126
192	1.054	1.067	1.140	1.042	1.057	1.125	1.042	1.054	1.124	1.040	1.115	1.117
204	1.046	1.060	1.127	1.037	1.051	1.115	1.037	1.048	1.114	1.035	1.106	1.108
216	1.039	1.053	1.115	1.033	1.046	1.105	1.033	1.042	1.104	1.031	1.098	1.098
228	1.033	1.048	1.104	1.029	1.042	1.097	1.029	1.037	1.096	1.027	1.090	1.090
240	1.030	1.043	1.095	1.025	1.038	1.089	1.025	1.033	1.089	1.024	1.084	1.083
252	1.026	1.038	1.086	1.022	1.035	1.082	1.023	1.029	1.082	1.021	1.078	1.076
264	1.023	1.034	1.078	1.020	1.032	1.074	1.020	1.025	1.074	1.019	1.072	1.069
276	1.020	1.030	1.071	1.018	1.029	1.068	1.019	1.022	1.067	1.018	1.067	1.063
288	1.017	1.027	1.065	1.017	1.027	1.062	1.017	1.020	1.062	1.016	1.062	1.057
300	1.015	1.024	1.059	1.015	1.024	1.056	1.015	1.018	1.056	1.014	1.058	1.052
312	1.013	1.021	1.053	1.012	1.022	1.050	1.013	1.016	1.050	1.012	1.054	1.047
324	1.010	1.019	1.047	1.010	1.021	1.044	1.011	1.014	1.044	1.010	1.050	1.041
336	1.008	1.016	1.042	1.008	1.019	1.038	1.009	1.013	1.038	1.008	1.046	1.036
348	1.006	1.014	1.036	1.006	1.017	1.033	1.006	1.011	1.033	1.006	1.043	1.031
360	1.004	1.012	1.032	1.004	1.016	1.029	1.004	1.010	1.029	1.004	1.040	1.027
372	1.003	1.011	1.028	1.003	1.014	1.025	1.003	1.009	1.025	1.003	1.037	1.024
384	1.002	1.009	1.024	1.002	1.013	1.021	1.002	1.008	1.021	1.001	1.034	1.020
396	1.001	1.008	1.020	1.001	1.012	1.017	1.001	1.007	1.017	1.001	1.031	1.016
408	1.000	1.007	1.016	1.000	1.011	1.013	1.000	1.006	1.013	1.000	1.028	1.012
420	1.000	1.006	1.014	1.000	1.010	1.011	1.000	1.006	1.011	1.000	1.026	1.010
432	1.000	1.005	1.011	1.000	1.009	1.008	1.000	1.005	1.008	1.000	1.024	1.008
444	1.000	1.004	1.009	1.000	1.008	1.006	1.000	1.004	1.006	1.000	1.021	1.006
456	1.000	1.003	1.007	1.000	1.007	1.004	1.000	1.004	1.004	1.000	1.019	1.004
468	1.000	1.002	1.006	1.000	1.006	1.003	1.000	1.003	1.003	1.000	1.017	1.003
480	1.000	1.002	1.005	1.000	1.005	1.002	1.000	1.003	1.002	1.000	1.015	1.002
492	1.000	1.001	1.005	1.000	1.005	1.002	1.000	1.002	1.002	1.000	1.014	1.002
504	1.000	1.001	1.005	1.000	1.004	1.002	1.000	1.002	1.002	1.000	1.012	1.002
516	1.000	1.001	1.005	1.000	1.003	1.002	1.000	1.002	1.002	1.000	1.010	1.002
528	1.000	1.000	1.005	1.000	1.003	1.002	1.000	1.001	1.002	1.000	1.008	1.002
540	1.000	1.000	1.005	1.000	1.002	1.002	1.000	1.001	1.002	1.000	1.007	1.002
552	1.000	1.000	1.005	1.000	1.002	1.002	1.000	1.001	1.002	1.000	1.005	1.002
564	1.000	1.000	1.005	1.000	1.001	1.002	1.000	1.001	1.002	1.000	1.004	1.002
576	1.000	1.000	1.005	1.000	1.001	1.002	1.000	1.000	1.002	1.000	1.003	1.002
588	1.000	1.000	1.005	1.000	1.000	1.002	1.000	1.000	1.002	1.000	1.001	1.002
600	1.000	1.000	1.005	1.000	1.000	1.002	1.000	1.000	1.002	1.000	1.000	1.002

Notes:
(1), (3), (4), (6), (7), (9), (10), & (12) - Per Towers Watson 6/30/2013 Reserve Review report.
(2), (5), (8), & (11) - Per Column (6) of Exhibit IV, Pages 3A, 3B, 3C, & 3D respectively.
* All Accident Years are 12-month periods ending 6/30 of the stated year.

MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

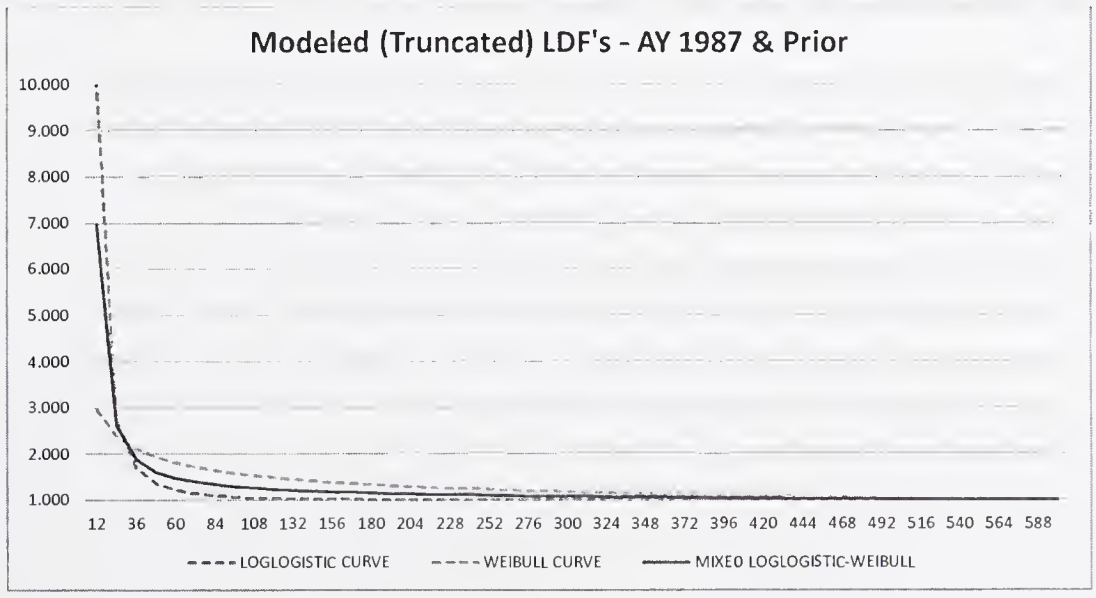
*ACCIDENT YEARS 1987 & PRIOR**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	10.120	10.111	4.840	2.977	8.405	6.981
24	2.802	2.800	3.886	2.390	3.154	2.620
36	1.698	1.697	3.431	2.110	2.261	1.878
48	1.356	1.355	3.147	1.935	1.938	1.610
60	1.211	1.210	2.946	1.812	1.775	1.474
72	1.138	1.137	2.795	1.719	1.676	1.392
84	1.096	1.095	2.674	1.645	1.609	1.336
96	1.070	1.069	2.575	1.584	1.559	1.295
108	1.053	1.052	2.492	1.533	1.521	1.263
120	1.042	1.041	2.421	1.489	1.490	1.237
132	1.033	1.032	2.358	1.451	1.464	1.216
144	1.027	1.026	2.304	1.417	1.442	1.198
156	1.023	1.022	2.255	1.387	1.423	1.182
168	1.019	1.018	2.211	1.360	1.406	1.168
180	1.016	1.015	2.171	1.335	1.391	1.156
192	1.014	1.013	2.135	1.313	1.378	1.145
204	1.012	1.011	2.102	1.293	1.366	1.135
216	1.011	1.010	2.071	1.274	1.355	1.126
228	1.009	1.008	2.043	1.256	1.345	1.117
240	1.008	1.007	2.016	1.240	1.336	1.109
252	1.007	1.006	1.992	1.225	1.327	1.102
264	1.007	1.006	1.969	1.211	1.319	1.096
276	1.006	1.005	1.947	1.198	1.312	1.090
288	1.005	1.004	1.927	1.185	1.305	1.084
300	1.005	1.004	1.908	1.173	1.298	1.078
312	1.004	1.003	1.890	1.162	1.292	1.073
324	1.004	1.003	1.872	1.152	1.286	1.068
336	1.004	1.003	1.856	1.142	1.281	1.064
348	1.003	1.002	1.841	1.132	1.275	1.059
360	1.003	1.002	1.826	1.123	1.270	1.055
372	1.003	1.002	1.812	1.114	1.266	1.051
384	1.003	1.002	1.798	1.106	1.261	1.048
396	1.003	1.002	1.785	1.098	1.257	1.044
408	1.002	1.001	1.773	1.090	1.253	1.040
420	1.002	1.001	1.761	1.083	1.249	1.037
432	1.002	1.001	1.750	1.076	1.245	1.034
444	1.002	1.001	1.739	1.069	1.241	1.031
456	1.002	1.001	1.728	1.063	1.238	1.028
468	1.002	1.001	1.718	1.057	1.234	1.025
480	1.002	1.001	1.708	1.051	1.231	1.023
492	1.002	1.001	1.699	1.045	1.228	1.020
504	1.001	1.000	1.689	1.039	1.225	1.017
516	1.001	1.000	1.681	1.034	1.222	1.015
528	1.001	1.000	1.672	1.028	1.219	1.013
540	1.001	1.000	1.664	1.023	1.216	1.010
552	1.001	1.000	1.656	1.018	1.214	1.008
564	1.001	1.000	1.648	1.014	1.211	1.006
576	1.001	1.000	1.640	1.009	1.209	1.004
588	1.001	1.000	1.633	1.004	1.206	1.002
600	1.001	1.000	1.626	1.000	1.204	1.000

Assumptions:

Loglogistic	
Scale	30.9
Shape	2.34
Weibull	
Scale	682.0
Shape	0.36
Weight to Loglogistic	0.675
Weight to Weibull	0.325
LDF Truncated at Age	600

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 600; (4) = (3) / (3) at age 600.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

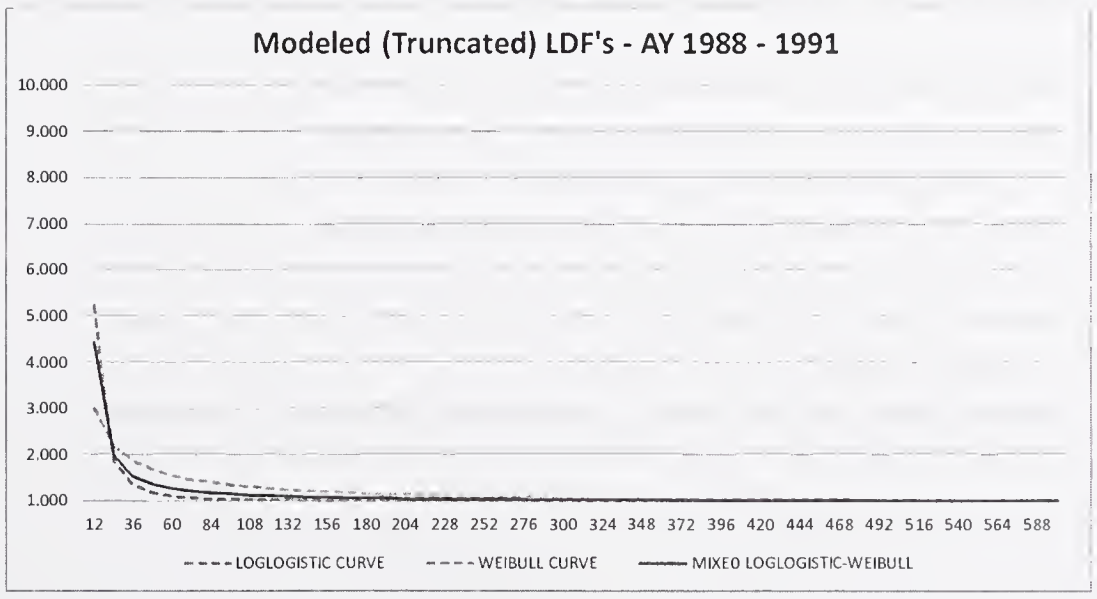
*ACCIDENT YEARS 1988 - 1991**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	5.238	5.235	3.087	3.012	4.462	4.421
24	1.863	1.862	2.263	2.208	2.007	1.989
36	1.340	1.339	1.918	1.872	1.549	1.534
48	1.176	1.175	1.722	1.680	1.373	1.360
60	1.105	1.105	1.593	1.554	1.281	1.269
72	1.069	1.069	1.501	1.464	1.225	1.214
84	1.049	1.048	1.431	1.397	1.187	1.176
96	1.036	1.035	1.377	1.344	1.159	1.148
108	1.027	1.027	1.333	1.301	1.138	1.127
120	1.021	1.021	1.297	1.266	1.121	1.111
132	1.017	1.017	1.267	1.237	1.107	1.097
144	1.014	1.014	1.242	1.212	1.096	1.086
156	1.012	1.011	1.220	1.190	1.087	1.077
168	1.010	1.009	1.201	1.172	1.079	1.069
180	1.008	1.008	1.184	1.156	1.072	1.062
192	1.007	1.007	1.170	1.141	1.066	1.056
204	1.006	1.006	1.157	1.129	1.061	1.051
216	1.006	1.005	1.145	1.117	1.056	1.046
228	1.005	1.004	1.135	1.107	1.052	1.042
240	1.004	1.004	1.125	1.098	1.048	1.038
252	1.004	1.003	1.117	1.090	1.045	1.035
264	1.004	1.003	1.109	1.082	1.042	1.032
276	1.003	1.003	1.102	1.075	1.039	1.029
288	1.003	1.002	1.096	1.069	1.036	1.027
300	1.003	1.002	1.090	1.063	1.034	1.025
312	1.002	1.002	1.084	1.058	1.032	1.022
324	1.002	1.002	1.080	1.053	1.030	1.021
336	1.002	1.001	1.075	1.049	1.028	1.019
348	1.002	1.001	1.071	1.045	1.027	1.017
360	1.002	1.001	1.067	1.041	1.025	1.016
372	1.002	1.001	1.063	1.037	1.024	1.014
384	1.001	1.001	1.060	1.034	1.022	1.013
396	1.001	1.001	1.057	1.031	1.021	1.012
408	1.001	1.001	1.054	1.028	1.020	1.011
420	1.001	1.001	1.051	1.025	1.019	1.010
432	1.001	1.001	1.048	1.023	1.018	1.009
444	1.001	1.001	1.046	1.020	1.017	1.008
456	1.001	1.000	1.044	1.018	1.016	1.007
468	1.001	1.000	1.041	1.016	1.016	1.006
480	1.001	1.000	1.039	1.014	1.015	1.005
492	1.001	1.000	1.038	1.012	1.014	1.005
504	1.001	1.000	1.036	1.011	1.013	1.004
516	1.001	1.000	1.034	1.009	1.013	1.003
528	1.001	1.000	1.033	1.008	1.012	1.003
540	1.001	1.000	1.031	1.006	1.012	1.002
552	1.001	1.000	1.030	1.005	1.011	1.002
564	1.001	1.000	1.028	1.003	1.011	1.001
576	1.001	1.000	1.027	1.002	1.010	1.001
588	1.001	1.000	1.026	1.001	1.010	1.000
600	1.001	1.000	1.025	1.000	1.009	1.000

Assumptions:

Loglogistic	
Scale	22.5
Shape	2.30
Weibull	
Scale	61.2
Shape	0.58
Weight to Loglogistic	0.639
Weight to Weibull	0.361
LDF Truncated at Age	600

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 600; (4) = (3) / (3) at age 600.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

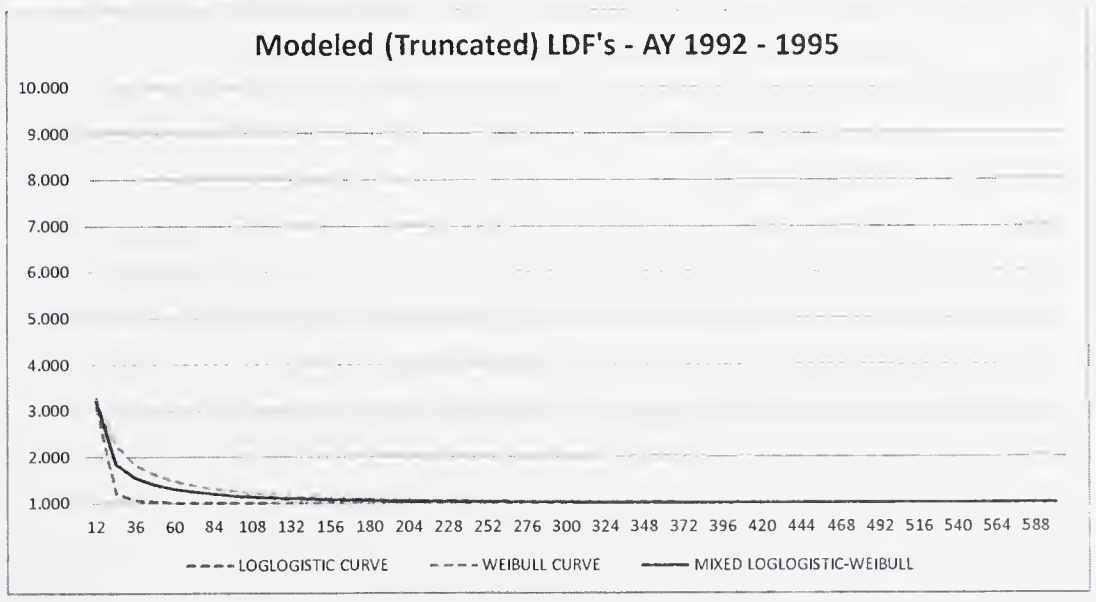
*ACCIDENT YEARS 1992 - 1995**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	3.086	3.085	3.289	3.278	3.214	3.206
24	1.210	1.210	2.245	2.237	1.861	1.856
36	1.055	1.055	1.840	1.834	1.549	1.545
48	1.021	1.021	1.621	1.615	1.398	1.395
60	1.010	1.010	1.483	1.478	1.307	1.304
72	1.006	1.006	1.388	1.383	1.246	1.243
84	1.003	1.003	1.318	1.314	1.201	1.199
96	1.002	1.002	1.266	1.261	1.168	1.165
108	1.001	1.001	1.225	1.220	1.142	1.139
120	1.001	1.001	1.192	1.188	1.121	1.119
132	1.001	1.001	1.165	1.161	1.104	1.102
144	1.001	1.001	1.144	1.140	1.090	1.088
156	1.000	1.000	1.125	1.121	1.079	1.077
168	1.000	1.000	1.110	1.106	1.069	1.067
180	1.000	1.000	1.097	1.093	1.061	1.059
192	1.000	1.000	1.086	1.082	1.054	1.052
204	1.000	1.000	1.076	1.072	1.048	1.046
216	1.000	1.000	1.068	1.064	1.043	1.040
228	1.000	1.000	1.060	1.057	1.038	1.036
240	1.000	1.000	1.054	1.050	1.034	1.032
252	1.000	1.000	1.048	1.045	1.031	1.028
264	1.000	1.000	1.044	1.040	1.027	1.025
276	1.000	1.000	1.039	1.036	1.025	1.022
288	1.000	1.000	1.035	1.032	1.022	1.020
300	1.000	1.000	1.032	1.028	1.020	1.018
312	1.000	1.000	1.029	1.025	1.018	1.016
324	1.000	1.000	1.026	1.023	1.017	1.014
336	1.000	1.000	1.024	1.020	1.015	1.013
348	1.000	1.000	1.022	1.018	1.014	1.011
360	1.000	1.000	1.020	1.016	1.012	1.010
372	1.000	1.000	1.018	1.014	1.011	1.009
384	1.000	1.000	1.016	1.013	1.010	1.008
396	1.000	1.000	1.015	1.011	1.009	1.007
408	1.000	1.000	1.014	1.010	1.009	1.006
420	1.000	1.000	1.012	1.009	1.008	1.006
432	1.000	1.000	1.011	1.008	1.007	1.005
444	1.000	1.000	1.010	1.007	1.007	1.004
456	1.000	1.000	1.010	1.006	1.006	1.004
468	1.000	1.000	1.009	1.005	1.006	1.003
480	1.000	1.000	1.008	1.004	1.005	1.003
492	1.000	1.000	1.007	1.004	1.005	1.002
504	1.000	1.000	1.007	1.003	1.004	1.002
516	1.000	1.000	1.006	1.003	1.004	1.002
528	1.000	1.000	1.006	1.002	1.004	1.001
540	1.000	1.000	1.005	1.002	1.003	1.001
552	1.000	1.000	1.005	1.001	1.003	1.001
564	1.000	1.000	1.004	1.001	1.003	1.001
576	1.000	1.000	1.004	1.001	1.003	1.000
588	1.000	1.000	1.004	1.000	1.002	1.000
600	1.000	1.000	1.004	1.000	1.002	1.000

Assumptions:

Loglogistic	
Scale	15.0
Shape	3.31
Weibull	
Scale	50.9
Shape	0.70
Weight to Loglogistic	0.371
Weight to Weibull	0.629
LDF Truncated at Age	600

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 600; (4) = (3) / (3) at age 600.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
ESTIMATION OF LOSS DEVELOPMENT FACTORS - CLARK LDF APPROACH
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

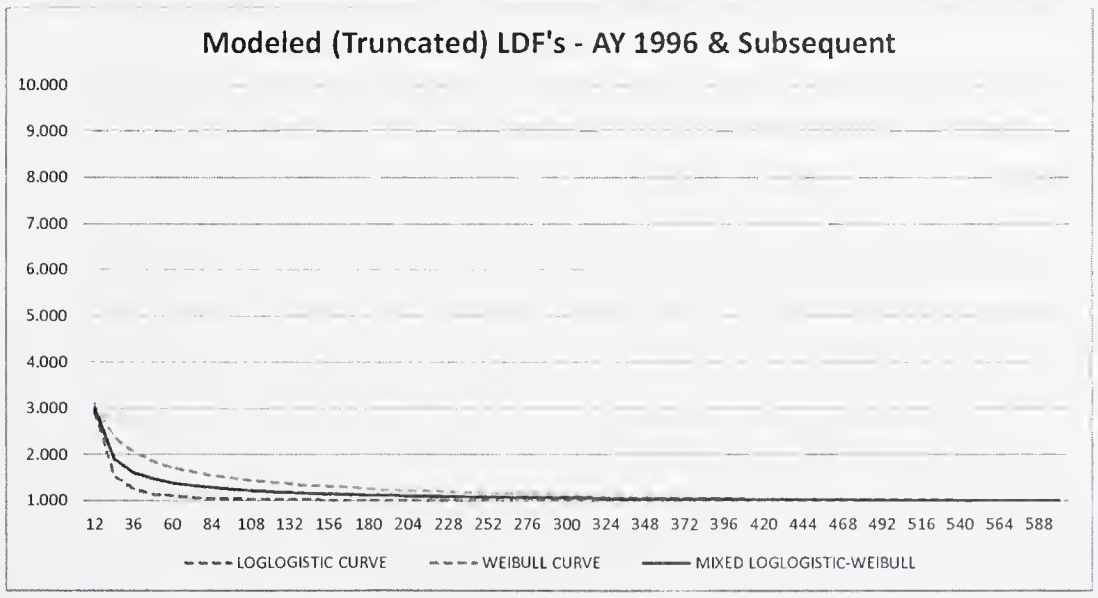
*ACCIDENT YEARS 1996 & SUBSEQUENT**

	LOGLOGISTIC CURVE		WEIBULL CURVE		MIXED LOGLOGISTIC-WEIBULL	
DEVELOPMENT MONTH	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF	FITTED CUMULATIVE LDF	TRUNCATED CUMULATIVE LDF
	(1)	(2)	(3)	(4)	(5)	(6)
12	2.919	2.915	3.511	3.101	3.172	3.000
24	1.525	1.523	2.686	2.372	2.020	1.911
36	1.246	1.244	2.318	2.047	1.703	1.611
48	1.143	1.142	2.099	1.853	1.551	1.467
60	1.094	1.093	1.949	1.721	1.459	1.380
72	1.067	1.066	1.839	1.624	1.397	1.321
84	1.050	1.049	1.754	1.549	1.351	1.278
96	1.039	1.038	1.686	1.489	1.315	1.244
108	1.031	1.030	1.629	1.439	1.287	1.217
120	1.026	1.025	1.582	1.397	1.263	1.195
132	1.022	1.020	1.541	1.361	1.243	1.176
144	1.018	1.017	1.506	1.330	1.227	1.160
156	1.016	1.015	1.475	1.303	1.212	1.146
168	1.014	1.012	1.448	1.279	1.199	1.134
180	1.012	1.011	1.424	1.257	1.188	1.123
192	1.011	1.009	1.402	1.238	1.177	1.114
204	1.010	1.008	1.382	1.220	1.168	1.105
216	1.009	1.007	1.364	1.204	1.160	1.097
228	1.008	1.006	1.347	1.190	1.153	1.090
240	1.007	1.006	1.332	1.176	1.146	1.084
252	1.006	1.005	1.318	1.164	1.139	1.078
264	1.006	1.005	1.305	1.152	1.133	1.072
276	1.005	1.004	1.293	1.142	1.128	1.067
288	1.005	1.004	1.282	1.132	1.123	1.062
300	1.005	1.003	1.271	1.123	1.118	1.058
312	1.004	1.003	1.261	1.114	1.114	1.054
324	1.004	1.003	1.252	1.106	1.110	1.050
336	1.004	1.002	1.244	1.098	1.106	1.046
348	1.004	1.002	1.235	1.091	1.102	1.043
360	1.003	1.002	1.228	1.084	1.099	1.040
372	1.003	1.002	1.221	1.078	1.096	1.037
384	1.003	1.002	1.214	1.072	1.093	1.034
396	1.003	1.001	1.207	1.066	1.090	1.031
408	1.003	1.001	1.201	1.061	1.087	1.028
420	1.002	1.001	1.195	1.055	1.085	1.026
432	1.002	1.001	1.189	1.051	1.082	1.024
444	1.002	1.001	1.184	1.046	1.080	1.021
456	1.002	1.001	1.179	1.041	1.078	1.019
468	1.002	1.001	1.174	1.037	1.075	1.017
480	1.002	1.001	1.170	1.033	1.073	1.015
492	1.002	1.001	1.165	1.029	1.072	1.014
504	1.002	1.000	1.161	1.025	1.070	1.012
516	1.002	1.000	1.157	1.022	1.068	1.010
528	1.002	1.000	1.153	1.018	1.066	1.008
540	1.002	1.000	1.149	1.015	1.064	1.007
552	1.001	1.000	1.145	1.012	1.063	1.005
564	1.001	1.000	1.142	1.009	1.061	1.004
576	1.001	1.000	1.139	1.006	1.060	1.003
588	1.001	1.000	1.135	1.003	1.059	1.001
600	1.001	1.000	1.132	1.000	1.057	1.000

Assumptions:

Loglogistic	
Scale	17.0
Shape	1.87
Weibull	
Scale	120.0
Shape	0.47
Weight to Loglogistic	0.573
Weight to Weibull	0.427
LDF Truncated at Age	600

Notes:
(1) & (3) - Fitted LDF's using estimated loglogistic and weibull parameters respectively.
(2) = (1) / (1) at age 600; (4) = (3) / (3) at age 600.
(5) - Weighted average of (1) & (3); (6) - weighted average of (2) & (4). The weights are estimated using maximum likelihood.
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

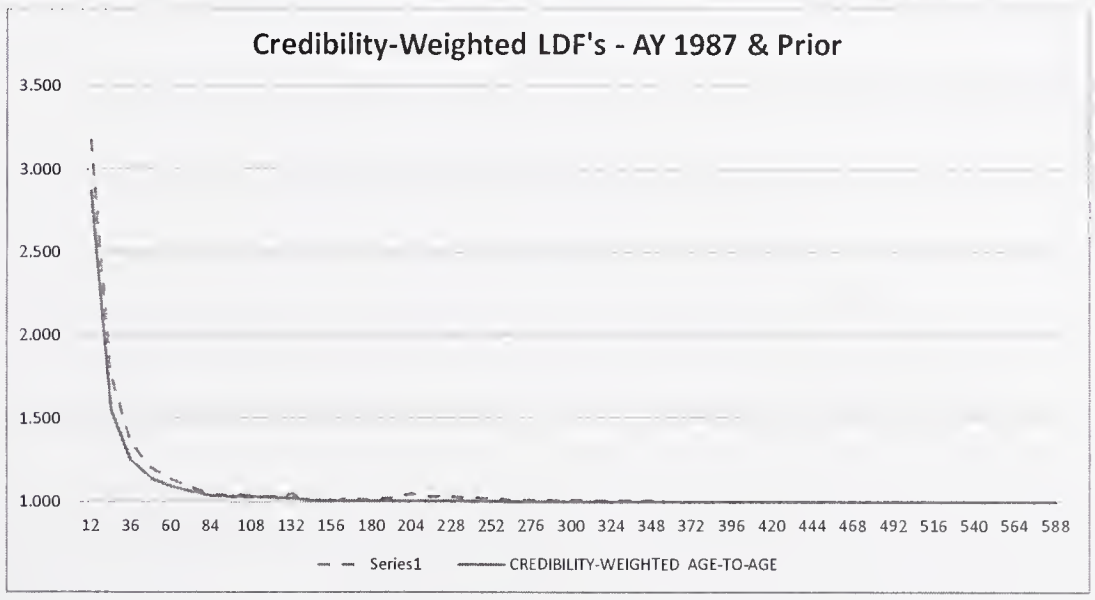
*ACCIDENT YEARS 1987 & PRIOR**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	3.174	0.400	2.665	2.868	2.868	9.598
24 - 36	1.762	0.424	1.395	1.551	1.551	3.346
36 - 48	1.356	0.447	1.167	1.252	1.252	2.158
48 - 60	1.202	0.469	1.092	1.144	1.144	1.724
60 - 72	1.136	0.490	1.059	1.097	1.097	1.508
72 - 84	1.090	0.510	1.042	1.067	1.067	1.375
84 - 96	1.043	0.529	1.032	1.038	1.038	1.289
96 - 108	1.042	0.548	1.025	1.035	1.035	1.242
108 - 120	1.038	0.566	1.021	1.031	1.031	1.200
120 - 132	1.031	0.583	1.018	1.026	1.026	1.164
132 - 144	1.050	0.600	1.015	1.036	1.023	1.135
144 - 156	1.014	0.447	1.013	1.014	1.014	1.110
156 - 168	1.007	0.447	1.012	1.010	1.010	1.095
168 - 180	1.024	0.447	1.011	1.017	1.009	1.084
180 - 192	1.014	0.469	1.010	1.012	1.008	1.075
192 - 204	1.026	0.469	1.009	1.017	1.007	1.067
204 - 216	1.047	0.447	1.008	1.025	1.006	1.060
216 - 228	1.033	0.469	1.007	1.019	1.005	1.053
228 - 240	1.032	0.490	1.007	1.019	1.005	1.048
240 - 252	1.030	0.510	1.006	1.018	1.004	1.043
252 - 264	1.022	0.529	1.006	1.014	1.004	1.038
264 - 276	1.014	0.548	1.006	1.010	1.004	1.034
276 - 288	1.012	0.566	1.005	1.009	1.003	1.030
288 - 300	1.011	0.583	1.005	1.009	1.003	1.027
300 - 312	1.010	0.600	1.005	1.008	1.003	1.024
312 - 324	1.009	0.616	1.005	1.007	1.002	1.021
324 - 336	1.009	0.632	1.004	1.007	1.002	1.019
336 - 348	1.009	0.632	1.004	1.007	1.002	1.016
348 - 360	1.009	0.632	1.004	1.007	1.002	1.014
360 - 372	1.003	0.632	1.004	1.003	1.002	1.012
372 - 384	1.003	0.616	1.004	1.003	1.002	1.011
384 - 396	1.003	0.600	1.003	1.003	1.001	1.009
396 - 408	1.002	0.583	1.003	1.003	1.001	1.008
408 - 420	1.002	0.566	1.003	1.002	1.001	1.007
420 - 432	1.002	0.548	1.003	1.002	1.001	1.006
432 - 444	1.001	0.529	1.003	1.002	1.001	1.005
444 - 456	1.001	0.510	1.003	1.002	1.001	1.004
456 - 468	1.001	0.490	1.003	1.002	1.001	1.003
468 - 480	1.001	0.469	1.003	1.002	1.001	1.002
480 - 492	1.000	0.447	1.003	1.002	1.000	1.002
492 - 504	1.000	0.424	1.002	1.001	1.000	1.001
504 - 516	1.000	0.400	1.002	1.001	1.000	1.001
516 - 528	1.000	0.374	1.002	1.001	1.000	1.001
528 - 540	1.000	0.346	1.002	1.001	1.000	1.000
540 - 552	1.000	0.316	1.002	1.001	1.000	1.000
552 - 564	1.000	0.283	1.002	1.002	1.000	1.000
564 - 576	1.000	0.245	1.002	1.002	1.000	1.000
576 - 588	1.000	0.200	1.002	1.002	1.000	1.000
588 - 600	1.000	0.141	1.002	1.002	1.000	1.000
600 - ULT						1.000

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit IV, Page 4.
(2) = min{√ [# of AY's used in (1) / 50] ,1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit IV, Page 2A, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit IV, Page 2A, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

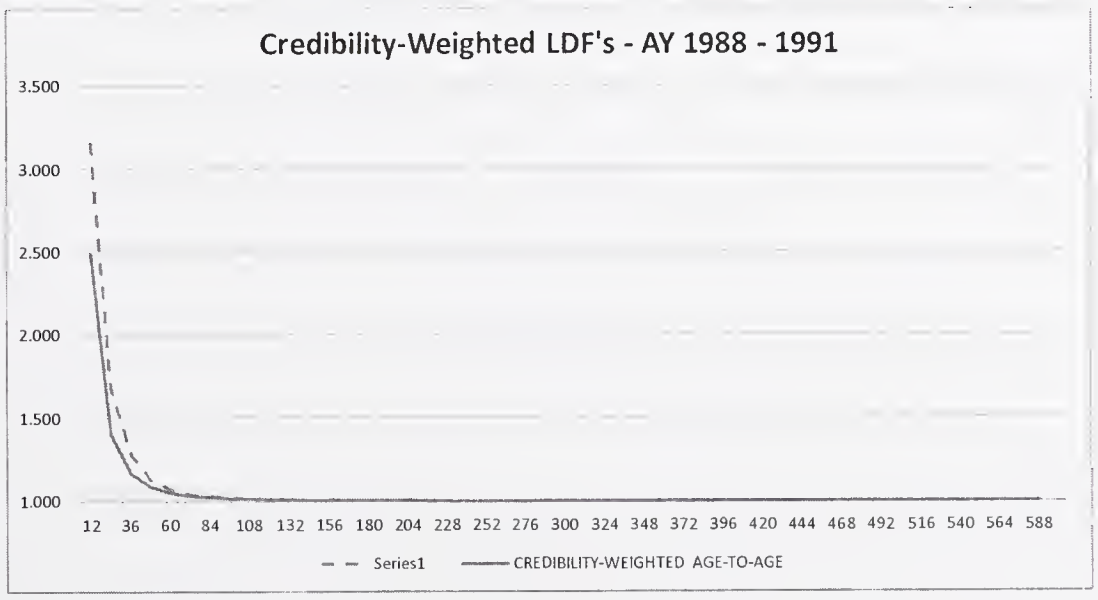
*ACCIDENT YEARS 1988 - 1991**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	3.159	0.283	2.223	2.488	2.488	5.783
24 - 36	1.688	0.283	1.296	1.407	1.407	2.324
36 - 48	1.289	0.283	1.128	1.174	1.174	1.652
48 - 60	1.129	0.283	1.072	1.088	1.088	1.408
60 - 72	1.076	0.283	1.046	1.054	1.054	1.294
72 - 84	1.043	0.283	1.032	1.035	1.035	1.227
84 - 96	1.034	0.283	1.024	1.027	1.027	1.185
96 - 108	1.023	0.283	1.019	1.020	1.020	1.154
108 - 120	1.018	0.283	1.015	1.016	1.016	1.132
120 - 132	1.014	0.283	1.012	1.013	1.013	1.114
132 - 144	1.012	0.283	1.010	1.011	1.011	1.100
144 - 156	1.009	0.283	1.009	1.009	1.009	1.089
156 - 168	1.010	0.283	1.007	1.008	1.008	1.079
168 - 180	1.008	0.283	1.006	1.007	1.007	1.071
180 - 192	1.007	0.283	1.006	1.006	1.006	1.063
192 - 204	1.006	0.283	1.005	1.005	1.005	1.057
204 - 216	1.006	0.283	1.004	1.005	1.005	1.051
216 - 228	1.004	0.283	1.004	1.004	1.004	1.046
228 - 240	1.004	0.283	1.004	1.004	1.004	1.042
240 - 252	1.003	0.283	1.003	1.003	1.003	1.038
252 - 264	1.003	0.283	1.003	1.003	1.003	1.035
264 - 276	1.002	0.283	1.003	1.002	1.002	1.032
276 - 288	1.002	0.283	1.002	1.002	1.002	1.029
288 - 300	1.002	0.245	1.002	1.002	1.002	1.027
300 - 312	1.004	0.200	1.002	1.003	1.002	1.024
312 - 324	1.002	0.141	1.002	1.002	1.002	1.022
324 - 336		0.000	1.002	1.002	1.002	1.021
336 - 348		0.000	1.002	1.002	1.002	1.019
348 - 360		0.000	1.001	1.001	1.001	1.017
360 - 372		0.000	1.001	1.001	1.001	1.016
372 - 384		0.000	1.001	1.001	1.001	1.014
384 - 396		0.000	1.001	1.001	1.001	1.013
396 - 408		0.000	1.001	1.001	1.001	1.012
408 - 420		0.000	1.001	1.001	1.001	1.011
420 - 432		0.000	1.001	1.001	1.001	1.010
432 - 444		0.000	1.001	1.001	1.001	1.009
444 - 456		0.000	1.001	1.001	1.001	1.008
456 - 468		0.000	1.001	1.001	1.001	1.007
468 - 480		0.000	1.001	1.001	1.001	1.006
480 - 492		0.000	1.001	1.001	1.001	1.005
492 - 504		0.000	1.001	1.001	1.001	1.005
504 - 516		0.000	1.001	1.001	1.001	1.004
516 - 528		0.000	1.001	1.001	1.001	1.003
528 - 540		0.000	1.001	1.001	1.001	1.003
540 - 552		0.000	1.001	1.001	1.001	1.002
552 - 564		0.000	1.000	1.000	1.000	1.002
564 - 576		0.000	1.000	1.000	1.000	1.001
576 - 588		0.000	1.000	1.000	1.000	1.001
588 - 600		0.000	1.000	1.000	1.000	1.000
600 - ULT						1.000

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit IV, Page 4.
(2) = min{√[# of AY's used in (1) / 50],1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit IV, Page 2B, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit IV, Page 2B, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

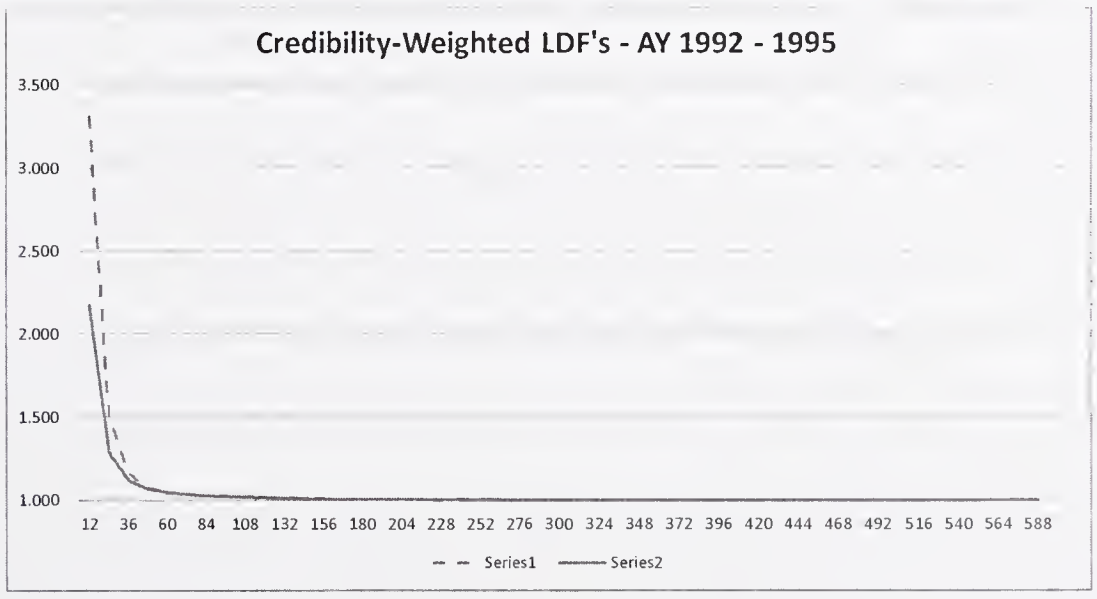
*ACCIDENT YEARS 1992- 1995**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	3.309	0.283	1.727	2.174	2.174	4.425
24 - 36	1.510	0.283	1.201	1.289	1.289	2.035
36 - 48	1.162	0.283	1.108	1.123	1.123	1.579
48 - 60	1.074	0.283	1.070	1.071	1.071	1.406
60 - 72	1.051	0.283	1.049	1.050	1.050	1.313
72 - 84	1.034	0.283	1.037	1.036	1.036	1.250
84 - 96	1.028	0.283	1.029	1.028	1.028	1.207
96 - 108	1.026	0.283	1.023	1.024	1.024	1.173
108 - 120	1.023	0.283	1.018	1.020	1.020	1.146
120 - 132	1.017	0.283	1.015	1.016	1.016	1.124
132 - 144	1.016	0.283	1.013	1.014	1.014	1.107
144 - 156	1.011	0.283	1.011	1.011	1.011	1.092
156 - 168	1.010	0.283	1.009	1.009	1.009	1.080
168 - 180	1.009	0.283	1.008	1.008	1.008	1.070
180 - 192	1.006	0.283	1.007	1.007	1.007	1.061
192 - 204	1.007	0.283	1.006	1.006	1.006	1.054
204 - 216	1.006	0.283	1.005	1.005	1.005	1.048
216 - 228	1.007	0.283	1.004	1.005	1.005	1.042
228 - 240	1.004	0.283	1.004	1.004	1.004	1.037
240 - 252	1.005	0.245	1.003	1.004	1.004	1.033
252 - 264	1.008	0.200	1.003	1.004	1.003	1.029
264 - 276	1.004	0.141	1.003	1.003	1.003	1.025
276 - 288		0.000	1.002	1.002	1.002	1.022
288 - 300		0.000	1.002	1.002	1.002	1.020
300 - 312		0.000	1.002	1.002	1.002	1.018
312 - 324		0.000	1.002	1.002	1.002	1.016
324 - 336		0.000	1.002	1.002	1.002	1.014
336 - 348		0.000	1.001	1.001	1.001	1.013
348 - 360		0.000	1.001	1.001	1.001	1.011
360 - 372		0.000	1.001	1.001	1.001	1.010
372 - 384		0.000	1.001	1.001	1.001	1.009
384 - 396		0.000	1.001	1.001	1.001	1.008
396 - 408		0.000	1.001	1.001	1.001	1.007
408 - 420		0.000	1.001	1.001	1.001	1.006
420 - 432		0.000	1.001	1.001	1.001	1.006
432 - 444		0.000	1.001	1.001	1.001	1.005
444 - 456		0.000	1.001	1.001	1.001	1.004
456 - 468		0.000	1.000	1.000	1.000	1.004
468 - 480		0.000	1.000	1.000	1.000	1.003
480 - 492		0.000	1.000	1.000	1.000	1.003
492 - 504		0.000	1.000	1.000	1.000	1.002
504 - 516		0.000	1.000	1.000	1.000	1.002
516 - 528		0.000	1.000	1.000	1.000	1.002
528 - 540		0.000	1.000	1.000	1.000	1.001
540 - 552		0.000	1.000	1.000	1.000	1.001
552 - 564		0.000	1.000	1.000	1.000	1.001
564 - 576		0.000	1.000	1.000	1.000	1.001
576 - 588		0.000	1.000	1.000	1.000	1.000
588 - 600		0.000	1.000	1.000	1.000	1.000
600 - ULT						1.000

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit IV, Page 4.
(2) = min{√ [# of AY's used in (1) / 50] ,1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit IV, Page 2C, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit IV, Page 2C, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND

LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
SELECTION OF CREDIBILITY-WEIGHTED LOSS DEVELOPMENT FACTORS
AS OF JUNE 30, 2014
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

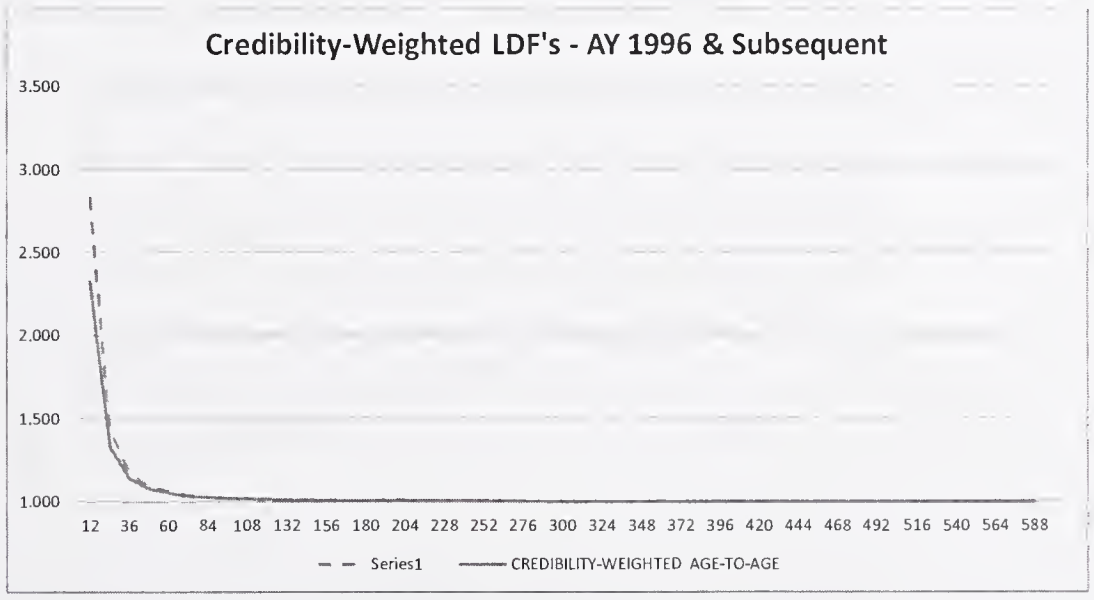
*ACCIDENT YEARS 1996 & SUBSEQUENT**

DEVELOPMENT PERIOD	SELECTED INDICATED AGE-TO-AGE LDF	CREDIBILITY WEIGHT	TRUNCATED MIXED LOGLOGISTIC-WEIBULL AGE-TO-AGE LDF	CREDIBILITY-WEIGHTED LDF'S INITIAL AGE-TO-AGE	ADJUSTED AGE-TO-AGE	ADJUSTED CUMULATIVE
	(1)	(2)	(3)	(4)	(5)	(6)
12 - 24	2.825	0.600	1.570	2.323	2.323	5.334
24 - 36	1.437	0.583	1.186	1.332	1.332	2.296
36 - 48	1.180	0.566	1.098	1.144	1.144	1.723
48 - 60	1.091	0.548	1.063	1.078	1.078	1.506
60 - 72	1.062	0.529	1.045	1.054	1.054	1.397
72 - 84	1.037	0.510	1.034	1.036	1.036	1.325
84 - 96	1.029	0.490	1.027	1.028	1.028	1.280
96 - 108	1.022	0.469	1.022	1.022	1.022	1.245
108 - 120	1.020	0.447	1.019	1.019	1.019	1.218
120 - 132	1.015	0.424	1.016	1.015	1.015	1.195
132 - 144	1.012	0.400	1.014	1.013	1.013	1.177
144 - 156	1.012	0.374	1.012	1.012	1.012	1.162
156 - 168	1.011	0.346	1.011	1.011	1.011	1.148
168 - 180	1.009	0.316	1.010	1.009	1.009	1.135
180 - 192	1.008	0.283	1.009	1.009	1.009	1.125
192 - 204	1.010	0.245	1.008	1.008	1.008	1.115
204 - 216	1.011	0.200	1.007	1.008	1.008	1.106
216 - 228	1.008	0.141	1.007	1.007	1.007	1.098
228 - 240		0.000	1.006	1.006	1.006	1.090
240 - 252		0.000	1.006	1.006	1.006	1.084
252 - 264		0.000	1.005	1.005	1.005	1.078
264 - 276		0.000	1.005	1.005	1.005	1.072
276 - 288		0.000	1.004	1.004	1.004	1.067
288 - 300		0.000	1.004	1.004	1.004	1.062
300 - 312		0.000	1.004	1.004	1.004	1.058
312 - 324		0.000	1.004	1.004	1.004	1.054
324 - 336		0.000	1.003	1.003	1.003	1.050
336 - 348		0.000	1.003	1.003	1.003	1.046
348 - 360		0.000	1.003	1.003	1.003	1.043
360 - 372		0.000	1.003	1.003	1.003	1.040
372 - 384		0.000	1.003	1.003	1.003	1.037
384 - 396		0.000	1.003	1.003	1.003	1.034
396 - 408		0.000	1.003	1.003	1.003	1.031
408 - 420		0.000	1.002	1.002	1.002	1.028
420 - 432		0.000	1.002	1.002	1.002	1.026
432 - 444		0.000	1.002	1.002	1.002	1.024
444 - 456		0.000	1.002	1.002	1.002	1.021
456 - 468		0.000	1.002	1.002	1.002	1.019
468 - 480		0.000	1.002	1.002	1.002	1.017
480 - 492		0.000	1.002	1.002	1.002	1.015
492 - 504		0.000	1.002	1.002	1.002	1.014
504 - 516		0.000	1.002	1.002	1.002	1.012
516 - 528		0.000	1.002	1.002	1.002	1.010
528 - 540		0.000	1.002	1.002	1.002	1.008
540 - 552		0.000	1.001	1.001	1.001	1.007
552 - 564		0.000	1.001	1.001	1.001	1.005
564 - 576		0.000	1.001	1.001	1.001	1.004
576 - 588		0.000	1.001	1.001	1.001	1.003
588 - 600		0.000	1.001	1.001	1.001	1.001
600 - ULT						1.000

Assumptions:

Full-credibility 50

Notes:
(1) - Per selected indicated age-to-age factors in Exhibit IV, Page 4.
(2) = min{√ [# of AY's used in (1) / 50},1.0}. Full-credibility standard per AMI judgment.
(3) - Age-to-age factors using Exhibit IV, Page 2D, Column (6).
(4) = (2) × (1) + [1.0 - (2)] × (3).
(5) - (4) judgmentally smoothened
(6) - Upward product of (5). Tail factor per Exhibit IV, Page 2D, Column (6).
* All Accident Years are 12-month periods ending 6/30 of the stated year.



MONTANA STATE FUND
LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
AS OF JUNE 30, 2014
CALCULATION OF THE LOSS DEVELOPMENT FACTORS
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

UNLIMITED LOSSES

PAID LOSS DEVELOPMENT

Accident Years	DEVELOPMENT MONTHS 12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1964																
1965																
1966																
1967																
1968																
1969												3,855				
1970											4,215	4,241				
1971										4,203	4,238	4,253				
1972									4,433	4,480	4,516	4,543				
1973								4,480	4,523	4,558	4,586	4,622				
1974							6,141	6,523	6,669	6,776	7,085	7,314				
1975						6,631	6,882	7,098	7,389	7,966	8,123	8,271				
1976					6,554	6,966	7,123	7,259	7,758	7,884	8,000	8,156				8,666
1977				7,801	8,523	8,978	9,449	10,330	10,684	10,844	11,063	12,079			12,445	11,485
1978			8,973	10,539	11,689	12,453	13,110	13,621	14,009	14,391	7,529	20,500	21,255	20,992	15,795	11,880
1979		7,869	11,404	13,475	14,784	15,538	16,301	16,947	17,369	8,631	18,432	18,854	19,075	19,310	19,550	19,702
1980	3,430	8,883	13,594	16,806	18,650	20,533	21,646	22,430	13,503	24,231	24,894	25,571	26,396	26,916	27,266	27,553
1981	3,739	9,454	14,518	18,097	20,396	22,733	24,553	17,701	27,533	28,392	29,483	30,324	30,909	31,468	31,855	32,262
1982	3,888	10,483	16,322	21,652	24,926	27,462	30,586	32,524	33,982	35,752	36,702	37,628	38,183	38,675	39,258	39,129
1983	4,075	11,096	19,205	25,192	29,259	33,446	36,591	39,332	41,685	42,931	43,972	44,758	45,549	46,100	46,194	46,636
1984	4,934	16,786	27,915	36,799	44,709	49,956	53,647	57,894	60,123	61,804	63,011	63,951	65,229	64,568	65,350	65,874
1985	5,718	17,356	30,852	42,831	51,526	57,216	63,167	65,878	67,758	69,402	70,381	71,708	71,541	72,200	73,004	73,552
1986	6,022	19,406	35,666	47,953	56,664	65,614	69,348	72,798	74,669	75,906	77,125	76,978	77,946	78,601	79,109	79,484
1987	6,311	19,660	34,731	48,001	59,963	67,456	72,169	74,629	76,404	78,294	78,246	78,892	79,742	80,404	80,900	81,433
1988	5,738	16,169	25,099	35,129	41,356	46,515	49,357	51,849	53,666	54,867	55,729	56,454	57,025	57,715	58,412	58,998
1989	5,880	17,105	29,804	39,607	45,371	48,577	51,260	53,111	53,836	54,814	55,570	55,974	56,452	56,998	57,466	57,882
1990	6,165	20,362	36,389	45,861	50,620	53,948	56,097	57,556	59,032	59,828	60,574	61,442	61,985	62,473	62,714	62,965
1991	6,613	23,442	38,803	47,053	51,944	54,637	55,786	57,264	58,327	59,392	60,243	60,956	61,555	62,162	62,740	63,126
1992	7,962	25,621	39,926	46,827	50,452	52,525	54,315	55,819	57,029	58,514	59,255	60,203	60,989	61,378	61,830	62,363
1993	6,758	23,291	35,662	42,036	44,920	47,229	48,771	49,935	51,523	52,416	53,492	54,541	55,374	56,387	56,920	57,258
1994	6,460	22,674	33,985	38,640	41,539	43,881	45,114	46,497	47,757	48,935	50,115	50,636	50,990	51,412	52,042	52,231
1995	6,339	19,461	27,901	32,303	34,772	36,875	38,405	39,576	40,514	41,535	42,032	42,730	43,138	43,499	43,754	44,052
1996	5,437	14,929	21,016	24,224	25,840	27,101	28,196	29,766	30,441	31,241	31,722	32,259	32,833	33,172	33,452	33,868
1997	4,115	11,513	15,924	18,224	20,026	21,876	23,001	23,648	24,332	25,011	25,369	25,794	26,275	26,901	27,054	27,249
1998	3,833	10,761	16,490	19,529	21,293	22,829	23,946	24,747	25,697	26,280	26,558	27,044	27,375	27,566	28,062	28,248
1999	4,084	11,911	17,549	20,857	23,104	25,138	26,417	27,613	28,400	29,144	29,612	29,927	30,130	30,603	30,862	31,070
2000	4,423	12,269	17,156	20,510	22,895	25,006	26,085	27,093	27,802	28,346	28,996	29,168	29,550	29,782	29,914	
2001	4,404	12,521	18,979	24,545	28,086	30,415	31,868	32,786	33,703	34,446	34,884	35,315	35,706	35,925		
2002	4,771	14,201	21,392	25,806	28,882	30,796	32,174	33,286	33,864	34,389	34,970	35,270	35,547			
2003	5,695	18,309	26,821	32,165	35,016	37,743	39,437	40,192	40,863	41,471	42,089	42,528				
2004	6,367	18,304	27,276	32,057	34,859	36,675	37,796	38,655	39,572	40,073	40,459					
2005	7,192	20,822	29,178	35,098	37,527	39,546	40,438	41,173	41,636	42,412						
2006	8,488	23,070	33,903	39,357	42,929	45,077	46,031	47,188	47,765							
2007	7,860	22,962	33,053	40,584	43,863	45,762	46,807	47,638								
2008	7,806	22,817	33,335	37,966	40,577	42,376	44,044									
2009	7,466	21,242	28,098	33,272	35,826	37,851										
2010	5,957	16,330	22,657	25,627	28,092											
2011	6,475	17,662	24,323	27,013												
2012	5,902	16,060	23,297													
2013	6,059	14,762														
2014	5,756															

LOSS DEVELOPMENT FACTORS

Accident Years	12 TO 24	24 TO 36	36 TO 48	48 TO 60	60 TO 72	72 TO 84	84 TO 96	96 TO 108	108 TO 120	120 TO 132	132 TO 144	144 TO 156	156 TO 168	168 TO 180	180 TO 192	192 TO 204
1964																
1965																
1966																
1967																
1968																
1969																
1970											1.006					
1971										1.008	1.004					
1972									1.011	1.008	1.006					
1973								1.010	1.008	1.006	1.008					
1974							1.062	1.022	1.016	1.046	1.032					
1975						1.038	1.031	1.041	1.078	1.020	1.018					
1976					1.063	1.023	1.019	1.069	1.016	1.015	1.020					0.585
1977				1.093	1.053	1.052	1.093	1.034	1.015	1.020	1.092				0.923	
1978			1.175	1.109	1.065	1.053	1.039	1.028	1.027	0.523	2.723	1.037	0.988	0.752	0.752	1.372
1979		1.449	1.182	1.097	1.051	1.049	1.040	1.025	0.497	2.136	1.023	1.012	1.012	1.012	1.008	1.006
1980	2.590	1.530	1.236	1.110	1.101	1.054	1.036	0.602	1.794	1.027	1.027	1.032	1.020	1.013	1.011	1.013
1981	2.528	1.536	1.247	1.127	1.115	1.080	0.721	1.555	1.031	1.038	1.029	1.019	1.018	1.012	1.013	0.990
1982	2.696	1.557	1.327	1.151	1.102	1.114	1.063	1.045	1.052	1.027	1.025	1.015	1.013	1.015	0.997	1.010
1983	2.723	1.731	1.312	1.161	1.143	1.094	1.075	1.060	1.030	1.024	1.018	1.018	1.012	1.002	1.010	1.011
1984	3.402	1.663	1.318	1.215	1.117	1.074	1.079	1.039	1.028	1.020	1.015	1.020	0.990	1.012	1.008	1.007
1985	3.035	1.778	1.388	1.203	1.110	1.104	1.043	1.029	1.024	1.014	1.019	0.998	1.009	1.011	1.008	1.006
1986	3.223	1.838	1.345	1.182	1.158	1.057	1.050	1.026	1.017	1.016	0.998	1.013	1.008	1.006	1.005	1.006
1987	3.115	1.767	1.382	1.249	1.125	1.070	1.034	1.024	1.025	0.999	1.008	1.011	1.008	1.006	1.007	1.008
1988	2.818	1.552	1.400	1.177	1.125	1.061	1.050	1.035	1.022	1.016	1.013	1.010	1.012	1.012	1.010	1.006
1989	2.909	1.742	1.329	1.146	1.071	1.055	1.036	1.014	1.018	1.014	1.007	1.009	1.010	1.008	1.007	1.006
1990	3.303	1.787	1.260	1.104	1.066	1.040	1.026	1.026	1.013	1.012	1.014	1.009	1.008	1.004	1.004	1.009
1991	3.545	1.655	1.213	1.104	1.052	1.021	1.026	1.019	1.018	1.014	1.012	1.010	1.010	1.009	1.006	1.005
1992	3.218	1.558	1.173	1.077	1.041	1.034	1.028	1.022	1.026	1.013	1.016	1.013	1.006	1.007	1.009	1.007
1993	3.446	1.531	1.179	1.069	1.051	1.033	1.024	1.032	1.017	1.021	1.020	1.015	1.018	1.009	1.006	1.006
1994	3.510	1.499	1.137	1.075	1.056	1.028	1.031	1.027	1.025	1.024	1.010	1.007	1.008	1.012	1.004	1.003
1995	3.070	1.434	1.158	1.076	1.060	1.041	1.030	1.024	1.025	1.012	1.017	1.010	1.008	1.006	1.007	1.014
1996	2.746	1.408	1.153	1.067	1.049	1.040	1.056	1.023	1.026	1.015	1.017	1.018	1.010	1.008	1.012	1.010
1997	2.798	1.383	1.144	1.099	1.092	1.051	1.028	1.029	1.028	1.014	1.017	1.019	1.024	1.006	1.007	1.017
1998	2.807	1.532	1.184	1.090	1.072	1.049	1.033	1.038	1.023	1.011	1.018	1.012	1.007	1.018	1.007	1.004
1999	2.917	1.473	1.189	1.108	1.088	1.051	1.045	1.029	1.026	1.016	1.011	1.007	1.016	1.008	1.007	
2000	2.774	1.398	1.196	1.116	1.092	1.043	1.039	1.026	1.020	1.023	1.006	1.013	1.008	1.004		
2001	2.843	1.516	1.293	1.144	1.083	1.048	1.029	1.028	1.022	1.013	1.012	1.011	1.006			
2002	2.977	1.506	1.206	1.119	1.066	1.045	1.035	1.017	1.016	1.017	1.009	1.008				
2003	3.215	1.465	1.199	1.089	1.078	1.045	1.019	1.017	1.015	1.015	1.010					
2004	2.875	1.490	1.175	1.087	1.052	1.031	1.023	1.024	1.013	1.010						
2005	2.895	1.401	1.203	1.069	1.054	1.023	1.018	1.011	1.019							
2006	2.718	1.470	1.161	1.091	1.050	1.021	1.025	1.012								
2007	2.921	1.439	1.228	1.081	1.043	1.023	1.018									
2008	2.923	1.461	1.139	1.069	1.044	1.039										
2009	2.845	1.323	1.184	1.077	1.057											
2010	2.741	1.387	1.131	1.096												
2011	2.728	1.377	1.111													
2012	2.721	1.451														
2013	2.436															
AVERAGE	2.942	1.532	1.225	1.116	1.078	1.050	1.030	1.031	1.031	1.036	1.067	1.014	1.010	0.998	0.993	1.005
3 YR AVG.	2.628	1.405	1.142	1.081	1.048	1.028	1.020	1.016	1.016	1.014	1.010	1.011	1.010	1.010	1.007	1.010
EXCL HI LO	2.938	1.529	1.223	1.113	1.076	1.048	1.037	1.028	1.023	1.017	1.017	1.014	1.010	1.009	1.003	1.007
SELECTED 86/87 & PRIOR	**3.174**	**1.762**	**1.356**	**1.202**	**1.136**	**1.090**	**1.043**	**1.042**	**1.038**	**1.031**	**1.050**	**1.014**	**1.007**	**1.024**	**1.014**	**1.026**
SELECTED 87/88-90/91	**3.159**	**1.688**	**1.289**	**1.129**	**1.076**	**1.043**	**1.034**	**1.023**	**1.018**	**1.014**	**1.012**	**1.009**	**1.010**	**1.008**	**1.007**	**1.006**
SELECTED 91/92-94/95	**3.309**	**1.510**	**1.162**	**1.074**	**1.051**	**1.034**	**1.028**	**1.026**	**1.023**	**1.017**	**1.016**	**1.011**	**1.010**	**1.009**	**1.006**	**1.007**
SELECTED 95/96-SUB	**2.825**	**1.437**	**1.180**	**1.091**	**1.062**	**1.037**	**1.029**	**1.022**	**1.020**	**1.015**	**1.012**	**1.012**	**1.011**	**1.009**	**1.008**	**1.010**

* All Accident Years are 12-month periods ending 6/30 of the stated year.

MONTANA STATE FUND
LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
AS OF JUNE 30, 2014
CALCULATION OF THE LOSS DEVELOPMENT FACTORS
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

UNLIMITED LOSSES

PAID LOSS DEVELOPMENT

Accident Years	DEVELOPMENT MONTHS 204	216	228	240	252	264	276	288	300	312	324	336	348	360	372	384
1964																
1965														2,298	2,298	2,284
1966													3,168	3,168	3,168	3,168
1967												3,110	3,110	3,110	3,109	3,109
1968											3,611	3,611	3,611	3,611	3,611	3,585
1969										3,877	3,877	3,877	3,877	3,877	3,860	3,860
1970						4,279			4,259	4,261	4,263	4,265	4,267	4,252	4,252	4,252
1971					4,279			4,311	4,313	4,316	4,344	4,386	4,370	4,372	4,373	4,373
1972				4,600			4,629	4,631	4,633	4,620	4,622	4,602	4,604	4,606	4,608	4,610
1973			4,700			4,711	4,711	4,711	4,711	4,711	4,696	4,696	4,696	4,698	4,698	4,698
1974		7,844			7,986	8,075	8,217	8,233	8,311	8,333	8,198	8,248	8,283	8,318	8,348	8,375
1975	8,750			8,881	8,983	9,069	9,126	9,240	9,240	9,178	9,263	9,328	9,382	9,464	9,514	9,561
1976	5,070		8,740	8,801	8,878	8,914	8,958	8,999	8,905	8,987	9,031	9,069	9,089	9,109	9,127	9,146
1977		11,734	11,796	11,930	12,030	12,083	12,112	11,989	12,038	12,119	12,177	12,254	12,324	12,384	12,440	12,497
1978	16,303	16,494	16,672	16,816	16,939	17,049	17,159	17,279	17,409	17,597	17,680	17,760	17,829	17,892	17,951	18,011
1979	19,829	20,020	19,885	20,052	20,135	20,243	20,356	20,450	20,548	20,643	20,717	20,793	20,887	20,947	21,007	21,067
1980	27,900	27,701	27,934	28,094	28,301	28,525	28,695	29,074	29,220	29,372	29,496	29,786	29,893	29,998	30,100	30,190
1981	31,928	32,180	32,321	32,523	32,741	32,939	33,529	33,696	33,869	34,009	34,148	34,281	34,444	34,568	34,676	34,790
1982	39,522	39,885	40,238	40,507	41,071	41,405	41,646	41,876	42,095	42,330	42,562	42,776	42,983	43,204	43,377	43,546
1983	47,146	47,439	47,807	48,184	48,466	48,792	49,055	49,267	49,467	49,661	49,847	50,025	50,201	50,371	50,524	50,674
1984	66,341	66,860	67,242	67,612	68,139	68,458	68,802	69,077	69,327	69,621	69,823	70,013	70,234	70,396	70,604	
1985	73,986	74,585	75,014	75,521	75,901	76,262	76,463	76,659	76,920	77,090	77,255	77,411	77,555	77,750		
1986	79,960	80,391	80,821	81,140	81,450	81,649	81,853	82,045	82,224	82,461	82,636	82,798	82,939			
1987	82,071	82,545	82,922	83,260	83,462	83,671	83,947	84,153	84,316	84,512	84,654	84,785				
1988	59,348	59,637	59,876	60,313	60,543	60,713	60,882	61,055	61,199	61,637	61,738					
1989	58,205	58,661	58,892	59,114	59,308	59,452	59,572	59,734	59,861	59,959						
1990	63,529	63,802	63,965	64,123	64,245	64,500	64,589	64,717	64,835							
1991	63,434	63,912	64,311	64,597	64,771	64,942	65,033	65,122								
1992	62,780	63,106	63,756	64,071	64,523	64,833	65,073									
1993	57,622	58,143	58,444	58,653	59,021	59,746										
1994	52,413	52,753	52,959	53,127	53,220											
1995	44,655	44,869	45,246	45,441												
1996	34,191	34,517	34,786													
1997	27,703	28,030														
1998	28,363															
1999																
2000																
2001																
2002																
2003																
2004																
2005																
2006																
2007																
2008																
2009																
2010																
2011																
2012																
2013																
2014																

LOSS DEVELOPMENT FACTORS

Accident Years	204 TO 216	216 TO 228	228 TO 240	240 TO 252	252 TO 264	264 TO 276	276 TO 288	288 TO 300	300 TO 312	312 TO 324	324 TO 336	336 TO 348	348 TO 360	360 TO 372	372 TO 384	384 TO 396
1964																
1965														1.000	0.994	1.006
1966													1.000	1.000	1.000	1.000
1967												1.000	1.000	1.000	1.000	0.993
1968											1.000	1.000	1.000	1.000	0.993	1.000
1969										1.000	1.000	1.000	1.000	0.996	1.000	1.000
1970									1.000	1.000	1.000	1.000	0.996	1.000	1.000	1.000
1971								1.000	1.001	1.006	1.010	0.996	1.000	1.000	1.000	1.000
1972							1.000	1.000	0.997	1.000	0.996	1.000	1.000	1.000	1.000	1.000
1973						1.000	1.000	1.000	1.000	0.997	1.000	1.000	1.000	1.000	1.000	1.000
1974					1.011	1.018	1.002	1.009	1.003	0.984	1.006	1.004	1.004	1.004	1.003	1.003
1975				1.011	1.010	1.006	1.012	1.000	0.993	1.009	1.007	1.006	1.009	1.005	1.005	1.004
1976			1.007	1.009	1.004	1.005	1.005	0.990	1.009	1.005	1.004	1.002	1.002	1.002	1.002	1.004
1977		1.005	1.011	1.008	1.004	1.002	0.990	1.004	1.007	1.005	1.006	1.006	1.005	1.005	1.005	1.005
1978	1.012	1.011	1.009	1.007	1.006	1.006	1.007	1.008	1.011	1.005	1.005	1.004	1.004	1.003	1.003	1.003
1979	1.010	0.993	1.008	1.004	1.005	1.006	1.005	1.005	1.005	1.004	1.004	1.005	1.003	1.003	1.003	1.002
1980	0.993	1.008	1.006	1.007	1.008	1.006	1.013	1.005	1.005	1.004	1.010	1.004	1.004	1.003	1.003	1.003
1981	1.008	1.004	1.006	1.007	1.006	1.018	1.005	1.005	1.004	1.004	1.004	1.005	1.004	1.003	1.003	1.003
1982	1.009	1.009	1.007	1.014	1.008	1.006	1.006	1.005	1.006	1.005	1.005	1.005	1.005	1.004	1.004	1.003
1983	1.006	1.008	1.008	1.006	1.007	1.005	1.004	1.004	1.004	1.004	1.004	1.004	1.003	1.003	1.003	
1984	1.008	1.006	1.006	1.008	1.005	1.005	1.004	1.004	1.004	1.003	1.003	1.003	1.002	1.003		
1985	1.008	1.006	1.007	1.005	1.005	1.003	1.003	1.003	1.002	1.002	1.002	1.002	1.003			
1986	1.005	1.005	1.004	1.004	1.002	1.002	1.002	1.002	1.003	1.002	1.002	1.002				
1987	1.006	1.005	1.004	1.002	1.003	1.003	1.002	1.002	1.002	1.002	1.002					
1988	1.005	1.004	1.007	1.004	1.003	1.003	1.003	1.002	1.007	1.002						
1989	1.008	1.004	1.004	1.003	1.002	1.002	1.003	1.002	1.002							
1990	1.004	1.003	1.002	1.002	1.004	1.001	1.002	1.002								
1991	1.008	1.006	1.004	1.003	1.003	1.001	1.001									
1992	1.005	1.010	1.005	1.007	1.005	1.004										
1993	1.009	1.005	1.004	1.006	1.012											
1994	1.006	1.004	1.003	1.002												
1995	1.005	1.008	1.004													
1996	1.010	1.008														
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AVERAGE	1.007	1.006	1.006	1.006	1.006	1.005	1.003	1.003	1.003	1.002	1.004	1.002	1.002	1.002	1.001	1.002
3 YR AVG.	1.007	1.007	1.004	1.005	1.007	1.002	1.002	1.002	1.004	1.002	1.002	1.002	1.003	1.003	1.003	1.003
EXCL HI LO	1.007	1.006	1.006	1.006	1.006	1.005	1.004	1.003	1.003	1.003	1.004	1.003	1.002	1.002	1.001	1.002
SELECTED 86/87 & PRIOR	**1.047**	**1.033**	**1.032**	**1.030**	**1.022**	**1.014**	**1.012**	**1.011**	**1.010**	**1.009**	**1.009**	**1.009**	**1.009**	**1.003**	**1.003**	**1.003**
SELECTED 87/88-90/91	**1.006**	**1.004**	**1.004**	**1.003**	**1.003**	**1.002**	**1.002**	**1.002**	**1.004**	**1.002**						
SELECTED 91/92-94/95	**1.006**	**1.007**	**1.004**	**1.005**	**1.008**	**1.004**										
SELECTED 95/96-SUB	**1.011**	**1.008**														

MONTANA STATE FUND
LOSS AND LOSS ADJUSTMENT EXPENSE RESERVES REVIEW
AS OF JUNE 30, 2014
CALCULATION OF THE LOSS DEVELOPMENT FACTORS
WORKERS' COMPENSATION - INDEMNITY BENEFITS
($AMTS IN THOUSANDS)

UNLIMITED LOSSES

PAID LOSS DEVELOPMENT

Accident Years	396	408	420	432	444	456	468	480	492	504	516	528	540	552	564	576	588	600
1964																		
1965	2,297	2,297	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284
1966	3,168	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	
1967	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087	3,087		
1968	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585	3,585			
1969	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860	3,860				
1970	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252	4,252					
1971	4,373	4,373	4,373	4,373	4,373	4,373	4,373	4,373	4,373	4,373	4,373	4,373						
1972	4,612	4,614	4,616	4,618	4,620	4,622	4,624	4,626	4,628	4,629	4,631							
1973	4,698	4,698	4,698	4,698	4,698	4,698	4,698	4,698	4,698	4,698								
1974	8,402	8,429	8,456	8,484	8,511	8,535	8,556	8,575	8,591									
1975	9,599	9,634	9,666	9,697	9,728	9,754	9,783	9,807										
1976	9,184	9,204	9,210	9,216	9,221	9,227	9,233											
1977	12,556	12,614	12,669	12,718	12,764	12,811												
1978	18,069	18,111	18,128	18,147	18,170													
1979	21,111	21,144	21,182	21,221														
1980	30,277	30,365	30,449															
1981	34,907	35,022																
1982	43,682																	
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LOSS DEVELOPMENT FACTORS

Accident Years	396 TO 408	408 TO 420	420 TO 432	432 TO 444	444 TO 456	456 TO 468	468 TO 480	480 TO 492	492 TO 504	504 TO 516	516 TO 528	528 TO 540	540 TO 552	552 TO 564	564 TO 576	576 TO 588	588 TO 600	600 TO ULT
1964																		
1965	1.000	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
1966	0.994	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
1967	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
1968	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
1969	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
1970	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000						
1971	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000							
1972	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.001								
1973	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000									
1974	1.003	1.003	1.003	1.003	1.003	1.002	1.002	1.002										
1975	1.004	1.003	1.003	1.003	1.003	1.003	1.002											
1976	1.002	1.001	1.001	1.001	1.001	1.001												
1977	1.005	1.004	1.004	1.004	1.004													
1978	1.002	1.001	1.001	1.001														
1979	1.002	1.002	1.002															
1980	1.003	1.003																
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AVERAGE	1.001	1.001	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
3 YR AVG.	1.003	1.002	1.002	1.002	1.003	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
EXCL HI LO	1.001	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000				
SELECTED 86/87 & PRIOR	1.002	1.002	1.002	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
SELECTED 87/88-90/91																		
SELECTED 91/92-94/95																		
SELECTED 95/96-SUB																		

IV. APPENDIX

OUTLINE OF RESERVING METHODS APPLIED BY MSF' CONTRACT ACTUARY

Reserving Method	Method Description	Data Used	Data Adjustments or Special Considerations	Comments
Paid Loss Development	Project cumulative paid losses by accident year to ultimate based on selected factors. Factors are selected based on payment pattern history of older accident years	1. Cumulative paid losses by accident year and development age, separately for Medical and Indemnity 2. Lump sum payments - Indemnity 3. Excess settlements - Medical	1. Selected loss development factors for groups of accident years to reflect benefit changes impacting claim closure rates 2. Adjusted selected loss development factors for 1990/91 forward by .5% for Medical to accelerate assumed payout due to internal operational changes at MSF 3. Adjusted selected loss development factors for Indemnity by .5 month to reflect shorter TTD claims and more lump sum payments 4. Selected four levels of development factors for each group of accident years: low, high, high thru age 25 years/low after, average of high and low 5. One Medical indication is adjusted by removing excess medical settlements. One Indemnity indication is adjusted by removing lump sum payments.	This is a standard method. There are 4 indications for Medical and 4 for Indemnity using this method and various factor selections. Tail factors at age 50 years are judgmental.
Berquist-Sherman	Project adjusted cumulative reported losses by accident year to ultimate based on selected factors. Reported losses were first adjusted on a consistent average case reserve per open claim basis. Factors are selected based on payment pattern history of older accident years	1. Cumulative reported losses by accident year and development age for Medical. 2. Cumulative medical claim counts by accident year and development age , separately for reported, closed, and open counts. 3. Long-term inflationary trend of 7.5% for Medical.	1. Omitted indications for 2012/2013 and 2013/2014 due to inconsistency in zero-loss claims recording.	This method produced very high indications and appears to be given little weight in the final selection of ultimate. This method applied for Medical. AMI excluded this method in selecting ultimate Medical losses.
Frequency-Severity Index	Selects 2014/2015 level ultimate losses based on trended ultimate loss picks from the Development and Berquist-Sherman methods. Trend indices are estimated separately for claim counts, claim severity, business mix, and benefit level by regressing them to independent variables listed in the next column. Selected 2014/2015 level ultimate losses are then detrended using the same indices to get the indicated ultimate losses for each accident year.	1. Ultimate losses by accident year and development age 2. Historical reported claim counts by accident year and development age. 3. Ultimate payroll by year 4. Projected Ultimate Manual Premium by year 5. Mix of business relativities to current level by accident year for loss ratios and severity separately for Medical and Indemnity. 6. Rate level history 7. Benefit level history 8. CPI - Medical 9. Unemployment rate history 10. Change in employment rate history 11. Average weekly wage history 12. Method requires losses, payroll and premium to segment between policies currently active vs. departed business.	Same as Paid Loss Development 1-4	Not a common method. Adjusts a preliminary estimate of ultimate loss for each accident year to 2014/2015 level based on histories of claim counts, claim severity, mix of business and benefit level. For Medical, selects a projected ultimate loss at 2014/2015 level. For Indemnity, different selections were made for 1996/1997 & Prior, 1997/1998 to 2002/2003, and 2003/2004 & Subsequent. Divides that one selection by the index for each accident year.

OUTLINE OF RESERVING METHODS APPLIED BY MSF' CONTRACT ACTUARY

Reserving Method	Method Description	Data Used	Data Adjustments or Special Considerations	Comments
Bornhuetter-Ferguson	Estimates ultimate losses by accident year using actual paid and expected unpaid losses. Estimated expected unpaid losses as a percentage of ultimate losses are selected based on payment pattern history of older accident years.	1. Paid losses by accident year and development age	Same as Paid Loss Development 1-4	This is a standard method. One estimate relies on prior selected ultimate for the initial ultimate. One Medical estimate relies on the Frequency/Severity Index ultimate for the initial ultimate. There are three initial ultimate assumptions for Indemnity. Loss development factors are the average of the low and high selections by accident year group, accelerated as described above in the Paid Loss Development section.
Adjusted Case Reserve	Estimates ultimate losses by accident year based on adjusted case reserves.	1. Case reserves and open claim counts, separately for TTD/Medical Only and All Other. 2. Reported claim counts by accident year and development age, separately for Medical and Indemnity. 3. Reported claim counts for TTD and Medical Only.	For the Old Fund, adjustments were made regarding the potential for future development, which was based on a July 21, 1998 Towers Watson report.	Assumes case reserves are reasonable except for unreported claims, future reopenings, change in disability type, medical inflation/cost of living adjustments and future development potential (Old Fund only). Assumes 7% medical inflation, 2% COLA. Inflation adjustment to Medical reserves significant: 25%-50% by accident year. Development of TTD and Medical Only claim counts judgmental based on MSF data provided to TW. Not sure what payment pattern used for inflation adjustment - average of high/low ?
Incurred Loss Development (Indemnity only)	Same as Paid Loss Development, but uses reported losses instead.	1. Cumulative reported losses by accident year and development age.	1. Selected loss development factors for groups of accident years to reflect benefit changes impacting claim closure rates	Not used for Medical because of inconsistent case reserving and volatility in losses.
Sherman-Diss Method (Old Fund only)	Projects medical and indemnity payments for open claims using a heuristic trended mortality model.	1. Paid losses and case reserves for open claims separately for Medical & Indemnity Fatal, Permanent Total, and Permanent Partial injuries. 2. Medical inflation rate. 3. Claimants' birth dates. 4. SSA Life Tables. 5. Fatal benefits and birth dates.	1. Paid loss development factors using the model were converted to a reported basis using ratios of reported-to-paid losses for open claims.	Sometimes used in WC reserving for old accident years. Medical indications use three medical inflation rates: 4%, 5%, and 6%.
ALAE - Paid to Paid	Selected ALAE ratio based on historical paid ALAE-to-paid loss ratios.	1. History of fiscal year paid ALAE and paid loss		More typical to develop ALAE, but not a major issue for WC.
ULAE - Johnson Method	Estimates ULAE based on relative ULAE costs per claim activity, i.e. reporting, maintenance, and closure.	1. Paid ULAE by fiscal year 2. History of open claims counts at beginning of each year 3. History of number of new claims opened during each fiscal year		Requires a trend factor assumption for ULAE per weighted open claim 4 7% was based on fitted ULAE per weighted open claim Select an amount for ULAE per wtd open claim and detrend to earlier accident years

V. COMMENTS FROM MSF AND TOWERS WATSON

MONTANA STATEFUND

P.O. Box 4759 • Helena, MT 59604-4759
Customer Service 1-800-332-6102
Fraud Hotline 1-888-682-7463 (888-MT-CRIME)

November 11, 2014

Tori Hunthausen
Legislative Audit Division
Post Office Box 201705
Helena, Montana 59620-1705

Dear Ms. Hunthausen:

Thank you for the opportunity to review and respond to the report presented by AMI Risk Consultants Inc. (AMI) on the adequacy and fairness of Montana State Fund (MSF) rates effective July 1, 2014 and the adequacy of MSF loss and loss adjustment reserves as of June 30, 2014.

We appreciate AMI's finding that MSF rates and reserves are reasonable and that MSF is likely to have adequate funding to meet its financial obligations to injured Montana employees for claims incurred on or after July 1, 1990. The AMI report also concludes that onr consulting actuary's (Towers Watson or TW) analysis of rates and reserves is consistent with generally accepted actuarial principles.

The volatility in global financial markets, historically unprecedented low interest rates, and rising medical costs create challenging risks for the insurance industry, particularly in the workers compensation line. Prudently managing these risks requires a strong balance sheet, a conservatively invested, well diversified asset portfolio, and adequate rates. In addition to these challenges, Montana has recently enacted sweeping benefit reforms which have led to significant rate reductions. It will take up to a decade before we will be able to determine whether benefit costs will be reduced as much as estimated and whether the rate decrease implemented July 1, 2011 will prove in hindsight to be too high or too low. A substantial variance between these estimates and actual results could have significant consequences for MSF and Montana employers.

There is an inherent uncertainty in projecting the cost of incurred workers compensation claims which will not be ultimately resolved in full for several decades in the future. The development of new medical technologies and changing patterns of medical utilization are but two examples of factors which will significantly affect the eventual cost of these claims though these factors cannot be predicted with certainty. Actuarial analysis is an inexact science which relies on judgment informed by data.

An example of the uncertainty inherent in estimating claim costs is the adverse development in Towers Watson central estimates for prior accident years, particularly from 2003 to 2010. Fortunately, MSF's strong financial position allowed us to absorb these fluctuations in prior year loss estimates without creating undue rate volatility for our customers. We are pleased to see our reserve estimates have largely stabilized over the past four years. In this time, prior accident year reserve estimates increased by a net $3.1 million and saw an average fluctuation in loss reserves of 0.1%. By comparison, we note $66.5 million in downward development in the central estimates of the LAD's consulting actuaries over this same time period.

There are risks in both underestimating as well as overestimating claim costs. If we significantly underestimate claim costs, we jeopardize the financial viability of MSF. If we overestimate claim costs, Montana's employers would pay unnecessarily excessive premiums, which are already very high relative to prevailing rate levels in other states. Our challenge is to find a reasonable balance between these two risks while maintaining a degree of stability in workers compensation rates for Montana employers. The key question is whether MSF rates and reserves are reasonable given the best available information and application of sound actuarial methodologies.

AMI's central estimate for MSF reserve liabilities differs from Towers Watson's central estimate. The difference reflects a 2.2% difference in estimated ultimate losses and is largely due to Towers Watson's fine-tuning the actuarial techniques in response to changes in statutory benefit structure, MSF operations and Towers Watson's judgments in weighting the various actuarial indications based on their knowledge of the Montana workers compensation system and MSF operations. We believe that the range selected by Towers Watson and the movement in their loss reserve estimates over time are reasonable and prudent given the need to balance the risks of inadequacy versus redundancy of loss reserves. We have asked Towers Watson to address the technical issues explaining the differences in the analyses. A copy of the Towers Watson response is attached and should be considered part of our formal response to the AMI report. AMI's analysis is a constructive comparison to Towers Watson's, quantifying the effect of the judgments made by Towers Watson in their analysis of reserve indications. We believe that Towers Watson's judgments are reasonable, appropriate, and backed by observable evidence. Nonetheless, the range of results in Towers Watson's and AMI's estimates underscores the variability inherent in workers compensation insurance reserving and the associated financial risks.

MSF proactively manages that risk by booking reserves on an undiscounted basis and by booking reserves higher than Towers Watson's actuarial central estimate by $64.2 million (as well as other conservative aspects of MSF financial reserves). The fact that MSF books its reserves on an undiscounted basis and above our consulting actuary's central estimate states MSF's financial position on a relatively conservative basis.

With regard to MSF rates effective July 1, 2014, AMI concludes that MSF rates are not inadequate, excessive, or unfairly discriminatory. AMI notes the inclusion of a contingency provision in MSF rates. Section 39-71-2311, MCA requires that, when uncertain, MSF shall use assumptions which result in predictions more likely rather than less likely to cover the cost of future claims. This contingency provision is in direct response to this statutory requirement and in our judgment is prudent and appropriate. MSF has the ability to return any amount of the contingency not needed to cover the cost of losses and expenses to Montana employers in the form of a dividend. However, MSF does not have the ability to retroactively charge customers additional amounts if rates prove to be inadequate. MSF's goal is to ensure a stable market for Montana employers.

AMI also comments on the adequacy of loss and loss adjustment reserves for claims incurred prior to July 1, 1990 (the "Old Fund"). AMI finds that Towers Watson's central estimate for the Old Fund as of 6/30/2014 falls below the range estimated by AMI. MSF acknowledges the risk that Old Fund claim liabilities may exceed the Towers Watson central estimate. The variance in actuarial estimates highlights the extreme difficulty in estimating the outstanding liabilities for the Old Fund given the nature of the underlying claims, many of which involve lifetime medical treatment for continually evolving medical conditions. The case reserves on only twelve Old Fund claims account for 75% of the total estimated unpaid losses. Variances in expected mortality on just these twelve individuals alone can significantly swing the results. AMI's analysis underscores the relatively wide variance in expected results for a runoff portfolio of workers compensation claims with no supporting assets nor margin for worse than expected results.

Overall, we believe that AMI's analysis constructively adds to our understanding of the uncertainties inherent in setting workers compensation premium rates and reserves and of the relative merits of alternate actuarial assumptions aud methods. We at the Montana State Fund work diligently to ensure a stable rate environment for Montana employers and that our financial obligations to injured Montana employees will be met.

Sincerely,

Laurence A. Hubbard
President/CEO

TOWERS WATSON

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Atlanta GA 30326-4238

towerswatson.com

November 10, 2014

Mr. Laurence Hubbard
President
Montana State Fund
855 Front Street
Helena, MT 59601

Dear Mr. Hubbard:

AMI Risk Consultants, Inc. Review of Montana State Fund's Loss Reserves and Rates

As you requested, we have reviewed the November 4, 2014 report (the AMI Report) prepared by Aguedo M. (Bob) Ingco of AMI Risk Consultants, Inc. (AMI) on the adequacy of Montana State Fund's (MSF's) rates effective July 1, 2014 and the adequacy of MSF's loss and loss adjustment expense (LAE) reserves as of June 30, 2014. This letter provides several comments, all of which presume that the reader has access to, and has read and understood, the AMI Report.

Much of the AMI analysis as documented in the AMI Report is based on AMI's review of various analyses and reports that have been prepared by Towers Watson (Towers Watson or we or our) for the management of MSF in the course of our ongoing engagement as consulting actuaries to management and the Board of MSF. In many cases, AMI derived its numerical results by judgmentally modifying a selected set of methodologies or parameters or judgments that had been made in the Towers Watson analyses, specifically Towers Watson's analysis of unpaid loss and loss adjustment expense as of June 30, 2014; and Towers Watson's analysis of rate level indications effective July 1, 2014 based on data as of December 31, 2013 (the Towers Watson Reports). Therefore, in this letter, we will also make reference to some of the Towers Watson Reports. We presume that the reader also has access to, and has read and understood, the Towers Watson Reports.

This letter, however, is based on our review of the written AMI Report.

Commentary – Overall Conclusions

Some of the specific numerical findings and conclusions in the AMI Report differ from the numerical findings and conclusions in the Towers Watson Reports. We will discuss some of those differences later in this letter.

We appreciate AMI's discussion of key issues relating to loss reserves and rates. This type of discussion can be useful to the understanding of what types of issues can affect the adequacy of loss reserves and of rates.

We concur with the conclusions in the AMI Report that:

- "Our opinion is that MSF's recorded loss and LAE reserves for the New Fund at June 30, 2014 are reasonable." (page 4 of the AMI Report).

We concur with AMI that MSF's provision for New Fund unpaid loss and loss adjustment expense as of June 30, 2014 is reasonable.

- "Our opinion is that the procedures used by TW to test the data used in both ratemaking and reserving are adequate. We do not have any further testing to suggest". (page 4 of the AMI Report)

  We concur with AMI that our data testing procedures are adequate.

- "In our opinion the data and methods applied by TW are reasonable. TW made every effort to account for changing conditions, both internal and external to MSF, in their choice and application of data. Furthermore, their selection of loss development factors and other selected values required by the various methods appear reasonable." (page 19 of the AMI Report).

  We further note that customizing the actuarial techniques and parameters to MSF's changing operating environment is an important element of the analysis due to the very significant changes – particularly in the statutory benefit structure, but also in MSF's operations – that have occurred over the years.

- "In our opinion, the rates effective July 1, 2014 are not excessive, inadequate, or unfairly discriminatory." (page 4 of the AMI Report)

- "We believe the procedures and methodology used by TW and MSF in class ratemaking and tiering are reasonable." (page 15 of the AMI Report)

  We concur with AMI that MSF's rates effective July 1, 2014 are not excessive, inadequate or unfairly discriminatory.

Commentary – Numerical Results

The AMI Report produces numerical indications for unpaid MSF losses at June 30, 2014 that are higher than the range suggested by the array of Towers Watson methodologies. After having had an opportunity to review the AMI Report, we have revisited our specific analyses and results. Based on our subsequent review, we have concluded that our original analyses, findings, and conclusions, as documented in the Towers Watson Reports, remain appropriate and reasonable. We would not alter our methodologies, assumptions, or selections based on our review of the AMI Report.

We would like to specifically address several important issues that relate to numerical differences between the results presented in the Towers Watson Reports and the results in the AMI Report.

Estimate of Unpaid Loss

In our analysis and projection of ultimate losses for each historical accident year, we reflect the changes in payment patterns that were and are expected, and that we have observed to result from several significant changes in the statutorily-defined structure of injured worker benefits. These restructurings had substantial effects on the Montana claims environment. Given the magnitude of these changes, we believe that historical data from periods prior to each of these significant benefit restructurings requires adjustment prior to using that historical data as a basis for anticipating the likely pattern with which recent years' claims will pay out. Towers Watson made explicit recognition of these environmental changes in our selection and projection of payout patterns for the more recent years. We continue to believe our resulting selection of development patterns, different for each set of years during which different benefit structures and benefit levels prevailed in Montana, is prudent and appropriate.

AMI notes (page 9 of the AMI Report) that the TW history of actuarial central estimate of ultimate losses showed a chronic pattern of adverse development, the adverse development is a small percentage of the

ultimate losses and that ultimate losses have stabilized over the recent years. The actuarial process is dynamic and cyclical. MSF has also had periods of significant favorable development and stable prior years ultimate loss development. As the loss experience emerges, the actuarial models and results move in the direction of the new data. Therefore, changes in actuarial estimates are expected and will continue until all claims are closed and settled at final ultimate value.

AMI raises concerns (pages 13, 19 and 28 of the AMI Report) that our judgmental selection of ultimate losses is low relative to the indications. AMI's concern implicitly assumes that all the projections should get equal weight in the selection process. We disagree with that assumption, as the various actuarial methods have different strengths and weaknesses and thus suit different situations differently, and we are comfortable with our selection of ultimate losses.

AMI notes on page 14 that they feel it is appropriate to calculate rates on a direct (gross of reinsurance) basis. We disagree with AMI. The Casualty Actuarial Society's Statement of Principles Regarding Property and Casualty Insurance Ratemaking and the American Academy of Actuaries Actuarial Standard of Practice #29, Expense Provisions in Property/Casualty Insurance Ratemaking both state that it is up to the actuary to reflect a provision for reinsurance. Further, if reinsurance costs increase, but that increase is not reflected in the rates, then the rates are inadequate. Conversely, if the reinsurance costs decrease, but the decrease is not reflected, then the rates are excessive.

When two actuaries use similar assumptions within each of the various actuarial methods, and thus arrive at similar results for each of the individual methods, the two actuaries may still arrive at different actuarial central estimates because of placing different judgmental weights on the results of those various different actuarial methods.

We recognize and respect AMI's exercise of independent actuarial judgment in its review, and we concur with AMI that two actuaries looking at the same methodologies and results may make different selections of their actuarial central estimates. We have no comment on AMI's selection of an actuarial central estimate from within a range of methodologies. However, we do believe that the methodologies themselves should reflect loss development parameters and selections appropriate to the Montana environment and MSF operations in which the claims will be handled and paid.

AMI notes (page 19 of the AMI Report) that TW should include an adjustment in loss adjustment reserves for the impact of HB334. We believe that our application of the Johnson method takes into account the effects of HB334 as the loss experience emerges.

Sources of Uncertainty

The ultimate liability for claims is subject to the outcome of events yet to occur, e.g., the likelihood of claimants filing, inflation in medical costs, statutory changes, and the attitudes of claimants towards settlements of their claims. The three primary risks defined in Actuarial Standard of Practice No. 43 – Property/Casualty Unpaid Claim Estimates are:

- Model Risk – The risk that the methods are not appropriate to the circumstances or the models are not representative of the specified phenomenon.
- Parameter Risk – The risk that parameters used in the methods or models are not representative of future outcomes.
- Process Risk – The risk associated with the projection of future contingencies that are inherently variable, even when the parameters are known with certainty.

All of these risks are inherent in the loss reserving and rate setting process for MSF and as a result, there is a limitation upon the accuracy of loss projections for prior periods and rate indications for prospective periods. In our judgment, we have employed techniques and assumptions that are appropriate, and the

conclusions presented in our reports are reasonable, given the information currently available. However, it should be recognized that future loss emergence will likely deviate, perhaps materially, from our estimates.

The table on page 9 of the AMI report shows Towers Watson's change in ultimate loss selections. The table illustrates the variability in conducting actuarial analyses of workers' compensation exposures.

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Reliances and Limitations; Distribution

In preparing this letter, we relied on data and information supplied by the MSF and AMI, without audit or verification. The information from MSF is the same information used in our reports, which contain a more extensive discussion of Reliances and Limitations that is equally applicable to this analysis.

This letter is intended for internal use by the MSF and its Board of Directors. Anyone receiving a copy of this letter should be made aware that Towers Watson is available to answer any questions that may arise with respect to these comments.

I, Russell Greig, am a member of the American Academy of Actuaries and meet its qualification standards to render the actuarial opinion contained herein.

We are available to continue the dialogue regarding MSF's loss reserves and rate indications.

Sincerely,

Russell Greig, FCAS, MAAA, CFA
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RG:mj